Greening the Ethiopian tax system at the confluence of environmental justice and development

Gebregiorgs, Merhatbeb

Publication date:
2018

Document Version
Publisher's PDF, also known as Version of record

GREENING THE ETHIOPIAN TAX SYSTEM AT THE CONFLUENCE OF ENVIRONMENTAL JUSTICE AND DEVELOPMENT

PROEFSCHRIFT

ter verkrijging van de graad van doctor aan
Tilburg University
op gezag van de rector magnificus,
prof. dr. E.H.L. Aarts,
in het openbaar te verdedigen ten overstaan van een
door het college voor promoties aangewezen commissie
in de Portrettenzaal van de Universiteit

op woensdag 12 december 2018 om 10.00 uur

door
Merhatbeb Teklemedhn Gebregiorgs,
geboren op 22 december 1981 te Adigrat, Ethiopië

Promotor: Prof. dr. J.M. Verschuuren

Copromotor: Dr. F.M. Fleurke

Overige leden van de promotiecommissie:

Prof. dr. N. de Sadeleer

Prof. dr. P.H.J. Essers

Prof. dr. C.J. Bastmeijer

Prof. dr. M. Faure

verklaring

De Rector Magnificus en de Faculteitsdecanen
van Tilburg University

Aan allen die dit lezen, gegroet.

Krachtens een wijs besluit van onze illustere voorgangers is bepaald dat zij, die in enige wetenschap zijn afgestudeerd en een academisch proefschrift hebben voltooid, een eervol getuigschrift kunnen verkrijgen ten bewijze van hun inspanningen en verworven kennis.

Aangezien de doorluchtige heer

Merhatbeb Teklemedhn Gebregiorgs

geboren op *22 december 1981* te *Adigrat, Ethiopië*

aan de vereisten van de Wet op het Hoger Onderwijs en het Wetenschappelijk Onderzoek heeft voldaan en nu de hoogste wetenschappelijke eer heeft verworven, reiken wij hem, gehoord de verdediging van zijn proefschrift, getiteld

Greening the Ethiopian Tax System at the Confluence of Environmental Justice and Development

waaruit ons duidelijk het bewijs van zijn kennis en inspanningen is gebleken, volgaarne deze oorkonde uit.

Uit kracht van de ons verleende bevoegdheid benoemen en proclameren wij hem derhalve plechtig tot doctor en verlenen hem alle rechten en status die door wet of gewoonte aan een wettig benoemde doctor worden toegekend.

Ten bewijze daarvan reiken wij hem deze oorkonde uit, ondertekend door de rector en promotor en bevestigd met het grootzegel van de Tilburg University.

Gegeven te Tilburg op *12 december 2018*

Rector Magnificus,

Promotor,

Namens deze,

R.J.M. van Riel
Head of Student Administration

TILBURG UNIVERSITY

Understanding Society

statement

The Chancellor and the Deans of Faculties
of Tilburg University

To all who read this, greetings,

By virtue of a wise decision of our illustrious predecessors it has been determined that those who have graduated in any discipline and have successfully completed an academic dissertation may be awarded a diploma in recognition of their efforts and of the knowledge acquired.

As Mr

Merhatbeb Teklemedhn Gebregiorgs

born on *22 December 1981* in *Adigrat, Ethiopia*

has fulfilled the requirements of the Laws of Higher Education and has now acquired the highest academic honours, and as we have heard the defence of his dissertation entitled

Greening the Ethiopian Tax System at the Confluence of Environmental Justice and Development

which testifies clearly to his knowledge and efforts, we are delighted to confer this diploma upon him.

By virtue of the authority granted to us we confer upon him a doctor's degree with all the rights and privileges pertaining to it.

In testimony thereof we present to him this diploma signed by the chancellor and the research supervisor and sealed with the seal of Tilburg University.

Given at Tilburg on *12 December 2018*

Chancellor,

p.o.

R.J.M. van Riel
Head of Student Administration

Research supervisor,

Dienst Uitvoering Onderwijs
Ministerie van Onderwijs, Cultuur en Wetenschap

Dienst Uitvoering Onderwijs
Ministerie van Onderwijs, Cultuur en Wetenschap

Authenticity is confirmed and in accordance with the National Examinations Register as maintained by DUO, Diploma-recognition & Legalization, on behalf of the Minister of Education, Culture and Science, The Netherlands.

Fees
€6,-
Date
13-12-2018
Signature

M.N. Groenbroek

Ministerie van Buitenlandse Zaken

Gezien voor legalisatie van de handtekening
The undersigned legalises the signature

van/*of* M.N. Groenbroek

De minister van Buitenlandse Zaken, voor deze,
For the minister of Foreign Affairs,

NLD364927

14 dec 2018 - S. Slusser

The Embassy of the Federal Democratic Republic of Ethiopia hereby certifies that this document is duly legalized by an authorized officer of the Ministry of Foreign Affairs of
Netherlands
Brussels, 17 DEC 18

Embassy of the Federal Democratic Republic of Ethiopia Consular Section Brussels

Mohammed Woliyu
Counsellor II

1503 002

Acknowledgement

This dissertation would not come to life without the support of many people to whom I am grateful. This gratefulness first and foremost goes to Prof. dr. Jonathan Verschuuren who inspired me by giving me a chance to discover my potential. All the timely and constructive reflections he gave me and the way he guided me through all the ups and downs have really made this PhD a great experience. Besides, I am grateful for Dr. F.M. Fleurke who agreed to co-supervise me.

Furthermore, I am grateful to the PhD committee members: Prof. dr. N. de Sadeleer, Prof. dr. P.H.J. Essers, Prof. dr. C.J. Bastmeijer and Prof. dr. M. Faure for giving their thoughtful remarks and for giving me a chance to improve my work at the very final stage.

Moreover, I am grateful to Dr. Bertha Vallejo for her incredible care and supported throughout the crystallization of this PhD dissertation. In addition, I am grateful to Nuffic, Tilburg University and Mekelle University for financing my PhD project.

Last but not least, my sincere gratitude goes to all my family members and colleagues who were unconditionally encouraging me throughout the PhD discourse.

This PhD dissertation is dedicated to my parents: Teklemedhn G. and Hadas G.

The articles

This PhD dissertation consists of four articles which are published in referred international peer-reviewed academic journals. The author has chosen to retain the formatting, citation style, and pagination of the published articles.

‘What are the Instrumental Roles of the Introduction of Environmental Tax in the Realisation of the Polluter-Pays Principle in Ethiopia?’ Published in South African Journal of Environmental Law and Policy (SAJELP) Volume 22 (2016), pp. 3 - 43.

‘Towards Sustainable Waste Management through Cautious Design of Environmental Taxes: The Case of Ethiopia’ Published in the Journal of Sustainability 2018, Volume 10, Issue 9, 3088.

‘Introducing an Administratively Feasible Environmental Tax System in Ethiopia’ Published in the University of Oregon's Journal of Environmental Law and Litigation (JELL) Volume 33 (2018), pp. 327 - 374.

‘The Role of Public Interest Litigation in the Achievement of Sustainable Waste Management in Ethiopia’ Published in the Journal of Sustainability 2018, Volume 10, Issue 12, 4735.

Contents

List of Abbreviations

1. AAA: Addis Ababa Administration
2. AABFED: Addis Ababa Bureau of Finance and Economic Development
3. AABTID: Addis Ababa Bureau of Trade and Industry Development
4. AACAA: Addis Ababa Cleanliness Administration Agency
5. AAEPA: Addis Ababa Environmental Protection Authority
6. AARA: Addis Ababa Revenue Authority
7. AASWRDPO: Addis Ababa Solid Waste Re-use and Disposal Project Office
8. AAWSA: Addis Ababa Water and Sewerage Authority
9. Art: Article
10. CME: Council of Ministers of Ethiopia
11. CSO: Civil Society Organizations
12. E.C.: Ethiopian Calendar
13. ECTs: Environmental Courts and Tribunals
14. EIA: Environmental Impact Assessment
15. EIAR: Environmental Impact Assessment Review
16. ERCA: Ethiopian Revenues and Customs Authority
17. ESA: Ethiopian Standards Agency
18. ETB: Ethiopian Birr
19. FDRE: Federal Democratic Republic of Ethiopia
20. FGD: Focus Group Discussions
21. FY: Fiscal Year
22. GATT: General Agreement on Tariffs and Trade
23. GHG: Greenhouse Gas
24. MEFCCE: Ministry of Environment, Forest, and Climate Change of Ethiopia
25. MIE: Ministry of Industry of Ethiopia
26. MWIEE: Ministry of Water, Irrigation and Electricity of Ethiopia
27. Neg. Gaz.: Negarit Gazeta
28. no.: Number
29. OECD: Organisation for Economic Co-operation and Development

30. SDGs: Sustainable Development Goals
31. UNFCCC: United Nations Framework Convention on Climate Change
32. WCED: World Commission on Environment and Development
33. WTO: World Trade Organization
34. WWT RUSP: Waste Water Treatment and Re-use Sub-Process

Chapter One:

Introduction of the Research

1. Introduction

A. Background of the Study

The judicious use of natural resources is a prerequisite for sustainable development,[1] and it can to a substantial degree be stimulated by a specific tax structure and tax constitution.[2]

The polluter-pays principle is one of the main outlines of sustainable development[3] that guides the actions of public authorities,[4] and it is a framework where environmental protection and environmental taxation meet.[5]

Correspondingly, price-based instruments were first suggested by Pigou in 1920 in the form of taxes and subsidies to deal with detrimental and beneficial environmental externalities.[6] Subsequently, different sources endorsed the internalisation of environmental costs and the use of environmental taxes based on the polluter-pays principle.[7]

In addition, public interest litigation is another one of the innovative techniques that encourages states to implement environmental tax within the context of environmental justice.[8]

---

1 Juergen G Bachaus 'Increasing the role of environmental taxes and charges as a policy instrument in developing countries: Some conceptual considerations' (2004) 63*AM J ECON SOCIOLY* 5 at 1097.

2 Bachaus op cit note 1 at 1097; The International Bank for Reconstruction and Development (IBRD)/The World Bank (WB) (IBRD/WB) *Environmental Fiscal Reform What Should be Done and How to Achieve It* (2005) 17 available at *http://siteresources.worldbank.org/INTRANETENVIRONMENT/Publications/20712869/EnvFiscalReform.pdf*, accessed on 31 May 2018; Katri Kosonen 'Regressivity of environmental taxation: Myth or reality?' in Janet E. Milne & Mikael Skou Andersen (eds) *Handbook of Research on Environmental Taxation* (2014) 12.

3 John Snape & Jeremy de Souza *Environmental Taxation Law: Policy, Contexts and Practice* (2006) 111; OECD Council Recommendation on the Use of Economic Instruments in Environmental Policy (1991) C (90) (Final) 2.3 at 177.

4 Nicolas De Sadeleer *Environmental Principles from Political Slogan to Legal Rules* (2002) 311.

5Federica Pitrone *Environmental Taxation: A Legal Perspective* (PhD Dissertation, Universita Luiss Guido Carli, 2013/2014) 130, available at *eprints.luiss.it/1291/1/20140217-pitrone.pdf*, accessed on 30 May 2018.

6 A C Pigou *The Economics of Welfare* 4 ed (1932); M N Murty 'Market based instruments for pollution abatement in India' in Pushpam Kumar (ed) *Economics of Environment and Development* (2005) 130.

7 UN 'Rio declaration on environment and development' (1992) Principle 16, available at *www.un.org/documents/ga/conf151/aconf15126-1annex1.htm*, accessed on 30 April 2018; UN 'Agenda 21' (1992) 2.14(c), 4.24 and 21.40 (b), available at *https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf*, accessed on 30 April 2018; Directive 2008/98/EC on waste (Waste Framework Directive), Preamble No 42, available at *http://ec.europa.eu/environment/waste/framework/framework_directive.htm*, accessed on 27 April 2018; Snape & De Souza op cit note 3 at 14. See also OECD Council Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies (1972) C(72)128 (Final), A(4).

8 When there is market failure, states are expected to protect the environment through the use of taxation and the command-and-control instruments of the polluter-pays principle. De Sadeleer op cit note 4 at 21; IBRD/WB op cit note 2 at 12, 17 and 20; Richard B Stewart 'Economic incentives for environmental protection: Opportunities and obstacles' in Richard L Revesz et al (ed) *Environmental Law, the Economy, and Sustainable Development* (2008) 174, 176 and 179; Charles D Kolstad *Environmental Economics* (2010) 151. Correspondingly, in seeking to hold states responsible for environmental pollution, public interest litigation could follow either a fundamental rights approach or a duty of care method. Oliver van Geel 'Urgenda and beyond: The past, present and future of climate

Conversely, due to the unique legal and institutional framework of states,[9] there is no single blueprint for the introduction of environmental tax that squarely applies across the board of all jurisdictions.[10] Thus, an attempt to introduce an environmental tax that is viable for the Ethiopian legal system has to be preceded by a careful analysis of environmental tax within its unique context.

B. Statement of the Problem and Objective of the Research

Ethiopia is committed to a federal system,[11] the idea of sustainable development,[12] sustainable waste management,[13] the polluter-pays principle[14] and public interest litigation within the context of environmental justice.[15]

---

change public interest litigation (2017) *Maastricht University Journal of Sustainability Studies* 64, available at *http://openjournals.maastrichtuniversity.nl/SustainabilityStudies/article/view/508/370*, accessed on 2 July 2018.

9 Agenda 21 op cit note 7 at 4.2.5; IBRD/WB op cit note 2 at 3, 41 and 53; UNEP *The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges* (2004) 4, available at *https://unep.ch/etu/publications/Economic_Instrument_Opp_Chnall_final.pdf*, accessed on 31 May 2018.

10 UNEP op cit note 9 at 12; James Alm & H Spencer Banzhaf 'Designing economic instruments for the environment in a decentralized fiscal system' (2012) *Journal of Economic Surveys* 26(2) 197, available at *https://ideas.repec.org/a/bla/jecsur/v26y2012i2p177-202.html*, accessed on 30 May 2018; Stefan Speck 'Options for promoting environmental fiscal reform in EC Development Cooperation, Country Report Uganda' (2010) 1.

11 The Constitution of the Federal Democratic Republic of Ethiopia, Proclamation (FDREC) no 1/1995, Neg. Gaz., 1st Year, no 1 Art 1 and 50(1)

12 FDREC op cit note 11 Art 43(1) (3); Environmental Policy of Ethiopia (EPE) (1997) no 2.1, 2.3 (c), (d), (k); National Conservation Strategy Volume II (NCS II) (1996) no 1.1; Ethiopian Water Resources Management Policy (EWRMP) 2001 at 1(1.1), 1.2(1) and (5), 1.3, 2.2.2 (c)(1), 2.3.1.2 (4); Ethiopian Water Sector Strategy (EWSS) 2001 at 1, 17; The National Energy Policy of Ethiopia (NEPE) (1993), no 3.6, 4.6, 5.6; Federal Environmental Protection Organs Establishment Proclamation (FEPOEP), no 295/2002, Neg. Gaz., 9th Year, no 7, Art 5; Federal Environmental Impact Assessment Proclamation (FEIAP), no 299/2002, Neg. Gaz., 9th Year, no 11, Preamble; Federal Pollution Control Proclamation (FPCP), no 300/2002, Neg. Gaz., 9th Year, no 12, Preamble; Federal Standards for Industrial Pollution Control in Ethiopia (FSIPCE) 2011 at 1; Urban Planning Proclamation (UPP), no 574/2008, Neg. Gaz., 14th Year, no 29, Preamble, Art 5(10); Access to Genetic Resources and Community Knowledge, and Community Rights Proclamation (AGRCKCRP) Preamble, Art 3 and 13; Fisheries Development and Utilization Proclamation (FDUP), no 315/2003, Neg. Gaz., 9th Year, no 32, Preamble; Code of Practice of the Floriculture Sector Council of Ministers Regulation (CPFSCMR), no 207/2011, Neg. Gaz., 17th Year, no 74, Preamble, Art 3; Public Health Proclamation (PHP), no 200/2000, Neg. Gaz., 8th Year, no 33, Preamble; Growth and Transformation Plan II of Ethiopia Volume I: Main Text (GTPE II) (2015/16-2020/21); Addis Ababa Administration Growth and Transformation Plan II (AAA GTP II) (2015/16-2020/21). Moreover, 'all international agreements ratified by Ethiopia are an integral part of the law of the land.' FDREC op cit note 11 Art 9(4) and 43(3).

13 FPCP op cit note 12. 'The 2030 agenda for sustainable development' (2015) (2030 Agenda for SD), Goal 6 at 12, available at *https://www.un.org*, accessed on 30 April 2018; GTPE II op cit note 12 at 77 and 113; AAA GTP II op cit note 12 at 39. 2030 Agenda for SD was one of the bases for the formulation of GTP II. Ibid at ix, 76 and 77.

14 EPE op cit note 12 no 2.2 (d), 4.6, (a), 2.3 (g); Natural Resources Development and Environmental Protection Strategy and Major Programmes (NRDEPSMP) (1994), no 4.2, 4.2.1, 20; NCS II op cit note 12no 2.4(79) (g); FPCP op cit note 12 Art 3(4) and 17; Addis Ababa City Government Environmental Pollution Control Regulation (AAEPCR), no 25/2007, Addis Neg. Gaz., 4th Year, no 56, Art 4(4), 14(4) and 22; Solid Waste Management Proclamation (SWMP), no 513/2007, Neg. Gaz., 13th Year, no 13, Art 16.

15 FDREC op cit note 11 Art 37(2); FPCP op cit note 12 Art 11; Prevention of Industrial Pollution Council of Ministers Regulation (PIPCMR), no 159/2008, Neg. Gaz., 15th Year, no 14, Art 10.

Simultaneously, the government has the duty to develop a national environmental liability and compensation regime and to introduce incentives/disincentives to discourage practices that may hamper the sustainable use of natural resources and/or the prevention of environmental degradation/pollution.[16] Moreover, each of its urban administrations has the duty to ensure a sanitary service charge-based, integrated waste management system.[17]

Nevertheless, at the moment, Ethiopia in general and the Addis Ababa Administration (AAA) in particular are subject to:

1. Solid waste,[18] sewage[19] and effluent mismanagement,[20]
2. Air pollution[21] and natural resource degradation[22] and

16 Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia (Amendment) Proclamation (DPDEOFDREA), no 803/2013, Neg. Gaz., 19th Year, no 61 Article 4 (33) (1)(k); Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation (DPDEOFDRE), no 691/2010, Neg. Gaz., 17th Year no 1; FEPOEP op cit note 12 Art 6(12).

17 FDREC op cit note 11 Article 100(2). 'Fees and Charges means a payment made by users to public bodies for the supply of goods, rendering of services and use of facilities; and does not include fines and penalties.' Addis Ababa City Government Financial Administration Regulation (AAFAR), no 39/2011, Addis Negarit Gazeta (Addis Neg. Gaz.), 3rd Year, no 39, Article 2(6); See also A Regulation of Revenue Authority of Addis Ababa City Administration (AARAR), no 17/2009, Addis Neg. Gaz., 1st Year, no 17, Article 2(5); FPCP op cit note 12 Art 5(1); See 'Municipal Service' in Addis Ababa City Government Revised Charter Proclamation (AACGRCP), no 361/2003, Addis Neg. Gaz., 9th Year, no 86, Preamble, Article 2(4); See 'Sanitary Service' in Waste Management, Collection and Disposal Regulation of the Addis Ababa City Administration Government Regulation (AAWMCDR) no 13/2004, Addis Neg. Gaz., 2nd Year, no 29, Article 2(2); See also SWMP op cit note 14 Art 4; EWRMP op cit note 12 at 7.

18 Addis Ababa Cleanliness Administration Agency Solid Waste Policy (AACAASWP) 1995 at 1; Camilla Louise Bjerkli 'Governance on the ground: A study of solid waste management in Addis Ababa, Ethiopia' (2013) 37.4 IJURR at 1277 and 1278, available at *https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1468-2427.2013.01214.x,* accessed on 30 April 2018.

19 Addis Ababa Water and Sewerage Authority, Waste Water Treatment and Reuse Sub-Process 2015 Annual Report (AAWSA WWTRSP 2015 AR); Addis Ababa Water and Sewerage Authority, Waste Water Treatment and Reuse Sub-Process 2016 Annual Report (AAWSA WWTRSP 2016 AR); Addis Ababa Water and Sewerage Authority, Waste Water Treatment and Reuse Sub-Process 2017 Annual Report (AAWSA WWTRSP 2017 AR).

20 Environmental Protection Authority 'National report of Ethiopia: UN conference on sustainable development' (Rio+20) (UN CSD Rio+20 NRE) (2012) 64, available at *https://sustainabledevelopment.un.org/content/documents/973ethiopia.pdf,* accessed on30 April 2018*;* EWRMP op cit note 12, Introduction; Ministry of Environment, Forest and Climate Change of Ethiopia, Assessment on Industrial Pollution and their Environmental, Economic and Social Impact (2014) (MEFCCE AIPEESI); Ministry of Industry of Ethiopia, Summary of Review Works on Environmental Management Practices of Selected Industries in Ethiopia (2014) (MIE SRWEMPSIE); Tsegai Brhane Gebretekle *Industrial Pollution Control and Management in Ethiopia: A Case Study on Almeda Factory and Sheba Leather Industry in Tigrai National Regional State* (unpublished PhD dissertation, University of Warwick School of Law, 2015), available at *wrap.warwick.ac.uk/67913/1/WRAP_THESIS_Ghebretekle_2015.pdf*, accessed on 29 April 2018; Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No 64902, Federal First Instance Court, Feb. 28, 2007).

21 Ethiopia's Climate Resilient Green Economy: Green Economy Strategy (ECRGES) (2011) 11; Ethiopia Millennium Development Goals Report (EMDGR) (2012) 42; UN CSD Rio+20 NRE op cit note 20 at 64.

22 EPE op cit note 12 at 1.1.

3. Public budget allocation for the social costs borne by their public authorities for pollution prevention and control.[23]

Thus, this research is designed *to assess the viability of greening the Ethiopian tax system at the confluence of environmental justice and development, i.e. at the point of sustainable development.*

In this research, *greening the Ethiopian tax system at the confluence of environmental justice and development is considered to be viable* when:[24]

1. The introduction of environmental taxes to Ethiopia has distributive and incentive roles,
2. There is cautious design of the source, base, scope and rate of environmental taxes,
3. There is administrative feasibility for the implementation of environmental taxes and
4. There is public interest litigation that encourages the federal and regional environmental protection and management organs of Ethiopia to implement environmental tax within the context of environmental justice.

Accordingly, the objective of this research is to appraise the:

1) Instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle in Ethiopia,
2) Viability of the design of solid waste, landfill, sewerage service and effluent charges in the achievement of sustainable waste management in Ethiopia,
3) Administrative feasibility of the introduction of environmental tax in the implementation of the polluter-pays principle in Ethiopia, and
4) Role of public interest litigation in encouraging the federal and regional environmental protection and management organs of Ethiopia to implement environmental tax and the command-and-control instruments of the polluter-pays principle as means of achieving sustainable waste management in Ethiopia.

---

23 Federal Budget Proclamations; Addis Ababa City Government 2006 E.C. Fiscal Year Budget Proclamation (AACG 2006 E.C. FY BP), no 31/2013, Addis Neg. Gaz., 4th Year, no 39, at Table 2 no 221, 523 and 524; Addis Ababa City Government 2007 E.C. Fiscal Year Budget Proclamation (AACG 2007 E.C. FY BP), no 41/2014, Addis Neg. Gaz., 6th Year, no 41, at Table 2 no 221, 523 and 524; Addis Ababa City Government 2008 E.C. Fiscal Year Budget Proclamation (AACG 2008 E.C. FY BP), no 44/2007 E.C., Addis Neg. Gaz., 7th Year, no 44, at Table 2 no 221, 523 and 524; Addis Ababa City Government 2009 E.C. Fiscal Year Budget Proclamation (AACG 2009 E.C. FY BP), no 47/2016 G.C., Addis Neg. Gaz., 8th Year, no 47, at Table 2 no 221, 523 and 524.

24 See details of the normative framework of the *viability of greening the Ethiopian tax system at the confluence of environmental justice and development* in section E of the introduction.

C. Methodology

Subject to a more elaborate and precise explanation of the methodology used for each article, the central methodological approach in this dissertation is an empirical qualitative method.[25] It has employed a desk study of academic literature to develop its normative frameworks. Being a single country case-oriented comparative research design, it makes use of triangulation of concepts that are applicable to other legal systems. In addition, it has used international, national and local legal instruments, official documents, key informant interviews, focus group discussions (FGD)[26] and observation as the major sources of data to assess the law and the practice of environmental tax-based waste management in the Addis Ababa Administration (AAA) of Ethiopia.[27] The key informants and solid waste, effluent and emission tax FGD participants, who are mainly from the environmental protection, management and tax organs of the federal government and the AAA, are selected through a purposive sampling technique.[28] Parallel to this, environmental and tax law scholars are selected through snowball and reputational sampling techniques, and they are used to elicit their conceptual view on the viability of greening the Ethiopian tax system. The qualitative analysis is iterative.[29] Inferences are drawn through interpretation, and their validity is assured through data source triangulation.[30]

---

25 'Qualitative research is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures; collecting data in the participants' setting; analyzing the data inductively, building from particulars to general themes; and making interpretations of the meaning of the data. The final written report has a flexible writing structure.' John W. Creswell *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* 3rd ed (2009)294-295, available at *https://www.researchgate.net/file.PostFileLoader.html?id...assetKey...*, accessed on 3 July 2017.

26 The focus group method is a form of group interview in which there are several participants; there is an emphasis in the questioning on a particular, fairly tightly defined topic; and the accent is upon interaction within the group and the joint construction of meaning. Alan Bryman *Social Research Methods* 4th ed (2012) 502.

27 'Case studies are a qualitative design in which the researcher explores in depth a program, event, activity, process, or one or more individuals. The case(s) are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time.' ibid at 290.

28 Purposive sampling is a non-probability form of sampling. The goal of purposive sampling is to sample participants in a strategic way, so that those sampled are relevant to the research questions that are being posed. Bryman op cit note 26 at 418.

29 In an iterative approach, data collection and analysis proceed in tandem, repeatedly referring back to each other. That is, there is a repetitive interplay between the collection and analysis of data. Bryman op cit note 26 at 387 and 566.

30 'Interpretation in qualitative research means that the researcher draws meaning from the findings of data analysis. This meaning may result in lessons learned, information to compare with the literature, or personal experiences.' Creswell op cit note 25 at 292. 'Interpretation refers to the task of drawing inferences from the collected facts after an analytical and/or experimental study.' C.R. Kothari *Research Methodology Methods and Techniques* 2nd ed (2004) 344. Triangulation entails using more than one method or source of data in the study of social phenomena so that findings may be cross-checked. Bryman op cit note 26 at 392 and 717. Data source triangulation is 'using evidence from different types of data sources, such as primary and secondary research or interviews, documents, public records, photographs and observations.' Available at *http://www.write.com/writing-*

The operationalisation of the key words in the research is done through the development of a normative framework. Finally, the empirical data of the research are tested against the normative framework, and then concluding remarks and implications are generated.

D. Conceptual Framework of the Research

1. Sustainable Development and Environmental Justice

'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'[31]

Sustainable development provides the general framework for all environmental issues.[32] The ideal (goal) of sustainable development assigns a high moral value to environmental law principles, which are meant to implement the ideal of sustainable development.[33] As such, they form a necessary link between legal rules and the ideal of sustainable development.[34]

Sustainable development goals (SDGs) are global in nature and universally applicable. They are integrated and indivisible, and the achievement of a particular SDG mutually contributes to the progress of other SDGs.[35]

---

guides/research-writing/research-process/data-triangulation-how-the-triangulation-of-data-strengthens-your-research/, accessed on 4 August, 2017.

31 Report of the World Commission on Environment and Development (RWCED) 'Our common future' 1987 at 41, available at *www.un-documents.net/our-common-future.pdf,* accessed on 30 April 2018 at 39. Sustainable development is 'a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development; and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.' Ibid at 43.

32 Philippe Cullet 'Environment and development – the missing link' in Julio Faundez & Celine Tan (ed) *International Economic Law, Globalization and Developing Countries*, (2010) 354.

33 Jonathan M Verschuuren 'Sustainable development and the nature of environmental legal principles' (2006) *Potchefstroom Electronic Law Journal 9(1)* at 1, available at *SSRN: http://ssrn.com/abstract=899537*, accessed on 31 July 2018; Stuart Bell & Donald McGillivray *Environmental Law* 7 ed 2008 at 54. Legal scholars have labeled 'sustainable development' a concept, a goal, a policy objective, a guideline, an ideal, a meta-principle, a weak norm of international law, a concept or principle of customary law, or a legal principle. See details in Jonathan Verschuuren 'The growing significance of the principle of sustainable development as a legal norm' in D Fisher (ed) *Research Handbook on Fundamental Concepts of Environmental Law*, (2016) 276. On the basis of Jonathan Verschuuren, it is safe to call the goal of sustainable development an ideal. Verschuuren (2006) op cit note 33 at 15.

34 Verschuuren (2006) op cit note 33 at 2, 52 and 53. Principles are derived from the fundamental moral principles that law is ultimately grounded in. Klaus Bosselmann *The Principles of Sustainability: Transforming Law and Governance* (2008) 48.

35 2030 Agenda for SD op cit note 13 at 2, 3, 11 and 12; Addis Ababa Action Agenda of the Third International Conference on Financing for Development (2015) AAAA TICFD at 5 and 6, available at *www.un.org*, accessed on 23 May 2018; World Health Organization, Chemicals and Waste Management: Essential to Achieving the Sustainable Development Goals (SDGs), available at *http://www.who.int/iomc/publications/IOMC_CWMandSDG_brochure_final_01Feb18.pdf*, accessed on 1 May 2018.

Environmental justice is one of the goals of sustainable development,[36] and it can be defined as an ideal of accountability and fairness in the protection and vindication of rights and the prevention and punishment of wrongs related to environmental degradation and pollution.[37] Concurrently, environmental tax and public interest litigation are part of the innovative techniques for its implementation.[38]

2. Sustainable Waste Management

Sustainable waste management is one the goals of sustainable development,[39] and it is defined as 'using material resources efficiently to cut down on the amount of waste produced, and, where waste is generated, dealing with it in a way that actively contributes to SDGs.'[40]

The various waste management options can be placed in an order known as the waste management hierarchy that reflects the relative sustainability of each.[41] Accordingly, the waste management hierarchy that shall apply as a priority order in waste prevention and management legislation and policy consists of prevention, re-use, recycling, recovery and disposal.[42]

In addition, different sources endorsed the use of environmental taxes to achieve sustainable waste management based on the polluter-pays principle.[43] Correspondingly, the cautious design of the source, base, scope and rate of environmental taxes is a critical determinant for their overall success in the full range of waste abatement options.[44]

3. Functions of the Polluter-Pays Principle(PPP)

The polluter-pays principle is one of the main outlines of sustainable development,[45] and polluter-pays serves as a principle, a rule and a policy, each with different respective functions

36 2030 Agenda for SD op cit note 13 at 12 Goal 16.

37 Kishan Khoday & Leisa Perch 'Green equity: environmental justice for more inclusive growth.' (2012) *International Policy Centre for Inclusive Growth* 19 at 1, available at *http://www.ipc-undp.org/pub/IPCPolicyResearchBrief19.pdf*, accessed on 2 July 2018.

38 See details in section 4.4 and 6.

39 2030 Agenda for SD op cit note 13 at 12.

40 Directive 2008/98/EC on Waste op cit note 7.

41 The aim of the waste management hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of waste. Directive 2008/98/EC on Waste op cit note 7.

42 Directive 2008/98/EC on Waste op cit note 7 Art 4.

43 UN Agenda 21 op cit note 7 at 264, 2.14(c) and 4.24; Rio Declaration op cit note 7 Principle 16; Snape & De Souza op cit note 3 at 14; Gebregiorgs (2016) op cit note 7.

44 See details in section 5.

45 Snape & De Souza op cit note 3 at 111; OECD (1991) op cit note 3 at 177.

and meanings aimed at reaching the ideal of sustainable development.[46] Correspondingly, this section is allocated to appraising the redistributive and incentive functions of the polluter-pays principle.

3.1 Redistributive Function of the PPP

One of the main functions of the polluter-pays principle is to internalise public authorities' social costs for pollution prevention and control[47] and to safeguard the public budget allocation for it.[48]

Consequently, polluters should reimburse the state's expenditures on the elimination, reduction and treatment of their emissions.[49] The redistributive function thus envisages the internalisation of the social costs borne by the public authorities for pollution prevention and control.

Simultaneously, from a scientific angle, degradation relates more to introducing pollutants into the ecosystem than to crossing a threshold of irreversibility. So setting an emission threshold necessarily leads to degradation that compromises the regenerative capacity of water, soil and air.[50] As a corollary, the polluter-pays principle should give rise to liability for residual damage that occurs due to the inadequacy of established discharge thresholds.[51]

Thus, by stressing the curative dimension, the polluter-pays principle represents a further step of ensuring compensation for damage resulting from authorised activities.[52]

3.2 Incentive Function of the PPP

From the legal perspective, the polluter-pays principle, with the objective of ensuring a coherent environmental policy, should be consistent with the principle of prevention.[53] From an economic point of view, if the costs polluters must bear are greater than the benefits they anticipate from

46 See details in Verschuuren op cit note 33.

47 De Sadeleer op cit note 4 at 35.

48 Pitrone op cit note 5 at 136.

49 S Shanthakumar *Introduction to Environmental Law*, 2 ed (2007) 383; De Sadeleer op cit note 4 at 35; Susan Wolf & Neil Stanley *Environmental Law* 5 ed (2011) 17; Alexandre Kiss & Dinah Shelton *Guide to International Environmental Law* (2007) 95; Nicholas A Ashford & Charles C Caldart *Environmental Law Policy, and Economics: Reclaiming the Environmental Agenda* (2008) 174; Eduard Barnard *Environmental Law for All: A Practical Guide for the Business Community, the Planning Professions, Environmentalists and Lawyers* (1999) 104.

50 Ibid at 37.

51 Ibid.

52 Ibid.

53 'The polluter-pays and preventive principles are two complementary aspects of a single reality.' De Sadeleer op cit note 4 at 36.

continuing their harmful behaviour, they are encouraged to reduce pollution to the optimal level.[54]

Put at the service of prevention, the polluter-pays principle means not allowing a polluter who pays to continue polluting with impunity. It thus aims at encouraging polluters to reduce their emissions/alter their behaviour rather than being content to pay taxes.[55]

4. Nature, Technical Justifications, Source, Roles, Base, Scope and Rate of Environmental Taxes

The proper understanding of the nature, technical justifications, role and design of the source, base, scope and rate of environmental taxes is a critical determinant for their overall success in the realisation of the polluter-pays principle.[56] Correspondingly, this section is allocated to appraising the critical determinants for the overall success of environmental tax.

4.1 Nature of Environmental Tax

A levy is a tax if it is compulsory, legally enforceable, levied by a public body and intended for a public purpose, and it can be used to cover taxes, fees and charges.[57]

On the basis of European Union's Eurostat:

> A tax falls into the category of environmental if the *tax base* is a *physical unit* (or a *proxy for it*) of something that has a proven specific negative impact on the environment, when used or released.[58]

The OECD, however, favours the terminology 'environmentally related tax' and defines it as 'any compulsory, unrequited payment to general government levied on tax-bases deemed to be of particular environmental relevance. Taxes are unrequited in the sense that benefits provided by government to tax payers are not normally in proportion to their payments.'[59]

---

54 Ibid.

55 D Pearce 'The polluter pays principle, briefing papers on key issues in environmental economics' Gatekeeper Series no LEEC 89-03 (2003) 2, available at *http://www.mekonginfo.org/assets/midocs/0002714-economy-the-polluter-pays-principle.pdf*, accessed on 8 June 2016.

56 See details in section 4.1-4.7.

57 Snape & De Souza op cit note 3 at 5; IBRD/WB op cit note 2 at 33.

58 European Commission 'Environmental taxes a statistical guide' (2013) *Publications Office of the European Union: Luxembourg* at 9, available at *http://ec.europa.eu/eurostat/documents/3859598/5936129/KS-GQ-13-005-EN.PDF*, accessed on 1 June 2018.

59 OECD Environmentally Related Taxes in OECD Countries: Issues and Strategies (2001) 15, available at *https://www.cbd.int/financial/fiscalenviron/g-fiscaltaxes-oecd.pdf*, accessed on 30 May 2018.

As a result, the name or stated purpose of a given fiscal instrument is not necessarily a universally applicable criterion for appraising the category of environmental tax.[60]

Moreover, on the basis of the definition of fiscal neutrality, a tax system should be designed so as primarily to raise revenue and not to encourage/discourage certain activities/behaviour.[61] Nevertheless, since fiscal neutrality is optimal only in the absence of externalities, changing the fiscal system in order to correct market failures is fully consistent with it. Thus, even if environmental tax is not neutral, it is by default consistent with fiscal neutrality.[62]

4.2 Technical Justifications for Environmental Tax

Market failures result from the failure of the market demand and supply schedules to reflect the full prices of externalities.[63] Pollution/depletion, where private benefits and costs diverge from social benefits and costs,[64] is one of the classic cases of negative externality.[65]

As a result, an unregulated market has room for unabated externalities[66] and grants implicit subsidy to polluters.[67] So, when a market fails to appreciate the opportunity costs of environmental use, it causes overuse of the environment and overproduction of ecologically harmful products.[68]

60 IBRD/WB op cit note 2 at 33; See also Joseph op cit note 6 at 188–190.

61 Fiscal neutrality is a situation in which a government does not use tax incentives to encourage or discourage behaviour, available at *https://financial-dictionary.thefreedictionary.com/Fiscal+Neutrality*, accessed on 12 May 2018.

62 Jean-Philippe Barde *Economic Instruments in Environmental Policy: Lessons from the OECD Experience and their Relevance to Developing Economies* (1994) 18.

63 H L Bhatia *Public Finance* 19 ed (1998) 5; Anil Markandya et al *Dictionary of Environmental Economics* (2002) 129.

64 Alm & Banzhaf op cit note 10 at 178; Markandya et al op cit note 63 at 94; See details in Pigou op cit note 6 at 172-203.

65 Markandya et al op cit note 63 at 5 and 94; Pigou op cit note 6 at 21; De Sadeleer op cit note 4 at 21; Bell & McGillivray op cit note 33 at 239. A *negative externality* is a cost that one economic agent imposes on another but does not take into account when making production or consumption decisions. When the cost of pollution or resource use are not reflected in prices, market inefficiencies will result in *excessive production* or *consumption of products* and activities that impose *social costs*. Externalities exist because of the public goods nature of the environment. OECD (2001) op cit note 59 at 19; Kolstad op cit note 8 at 91.

66 Alm & Banzhaf op cit note 10 at 179; Stewart op cit note 8 at 172; Pigou op cit note 6 at 134; Ashford & Caldart op cit note 49 at 132.

67 Murty op cit note 6 at 130; Snape & De Souza op cit note 3 at 119.

68 Horst Siebert *Economics of the Environment Theory and Policy*, 7 ed (2008) at 17 and 18.

In the meantime, while command-and-control instruments limit the quantity of residuals that each actor may generate, environmental tax provides an ideal means of injecting appropriate price signals and creating markets for unpriced resources and environmental services.[69]

As a result, when there is market failure, taxation and command-and-control instruments are the two supplementary/complementary policy mix instruments of the polluter-pays principle.[70]

4.3 Source of Environmental Tax

The modern principle of tax legality is a derivation from the great historical battles fought between legislative and executive bodies over the power of taxation.[71]

At the minimum, the principle of tax legality means that taxation must have a legal basis, and this is recognised as a constitutional precept in most legal systems.[72]

Being that environmental tax is part of a tax system, the legal authority enacting environmental taxes must take into account the principle of legality in the context of rule of law.[73] Equally, the source of environmental taxes is subject to the principle of legality and has to be set up by legislative acts.

4.4 Instrumental Roles of Environmental Tax

The bases of environmental tax vary according to the redistributive or incentive functions of the polluter-pays principle.[74] Correspondingly, this section is allocated to appraise the distributive and incentive roles of environmental taxes.

---

69 Jean-Philippe Barde 'Green tax reforms in OECD countries: An overview' (to be published in S Cnossen (ed) Taxes on Pleasure (2004) 2; Barde (1994) op cit note 62 at 10; Bell & McGillivray op cit note 33 at 18, 239 and 240; UNEP op cit note 9 at 29; Murty op cit note 6 at 128; Pigou op cit note 6 at 172. Stewart op cit note 8 at 174, 176 and 179; Kolstad op cit note 8 at 151.

70 De Sadeleer op cit note 4 at 21; IBRD/WB op cit note 2 at 12, 17 and 20; Stewart op cit note 8 at 174, 176 and 179; Kolstad op cit note 8 at 151; Bell & McGillivray op cit note 33 at 240. The polluter-pays principle is an economic rule of cost allocation whose source lies precisely in the theory of externalities. De Sadeleer op cit note 4 at 21.

71 Taddese Lencho 'The Ethiopian tax system: Excesses and gaps' (2013)20 *Mich. St. Int'l L. Rev*. 327 at 335, available at *https://digitalcommons.law.msu.edu/ilr/vol20/iss2/9,* accessed on 30 May 2018. In accordance with the well-known democratic claim for 'no taxation without representation,' the basic features of the environmental tax must be fixed in the parliamentary act itself. Michael Rodi & Hope Ashiabor, 'Legal authority to enact environmental taxes' in Janet E. Milne & Mikael Skou Andersen (eds), *Handbook of Research on Environmental Taxation* (2014) 70.

72 Frans Vanistendael 'Legal framework for taxation' in Victor Thuronyi (ed) *Tax Law Design and Drafting,* vol 2 (1996) 2, available at *www.imf.org/external/pubs/nft/1998/tlaw/eng/*, accessed 13 June 2016.

73 Rodi & Ashiabor op cit note 71 at 59 and 74. The principle of legality applies to environmental taxes as long as they are set up by legislative acts. Rodi & Ashiabor op cit note 71 at 70.

74 De Sadeleer op cit note 4 at 46.

a. Distributive Roles of Environmental Tax

Environmental fiscal reform opens the door to a new tax base, supplementing other revenue-raising efforts.[75] The underlying rationale of payment for ecosystem services is that beneficiaries of ecosystem services should compensate the stewards that maintain the services.[76] As a result, when an environmental tax fulfils a redistributive function, the tax should be proportional to the pollution[77] and the environmental risk created by commercialisation.[78]

On the basis of the benefits received theory, the state provides various public goods and services to the society, and beneficiaries contribute in proportion to the benefits received.[79] Accordingly, the distributive role assigned to environmental taxes argues in favour of allocating the revenue from environmental taxes to financing the environmental goal they target.[80]

Thus the distributive role of environmental tax is maintaining the ecosystem service and internalising the social costs to the public authorities for pollution prevention and control.[81]

b. Incentive Roles of Environmental Tax

Environmental taxes constitute a fiscal instrument[82] that sends environmentally friendly signals to consumers and industrialists.[83] They are the most emblematic instruments of the simultaneous intervention of the polluter-pays and prevention principles.[84]

Their incentive role encompasses a wide range of environmental taxes and encourages a more equal mix between cleaner production processes,[85] innovation,[86] end-of-pipe abatement

75 IBRD/WB op cit note 2 at 17.

76 Erik Gomez-Baggethun & Manuel Ruiz-Perez 'Economic valuation and the commodification of ecosystem services' (2011) at 7, available at *http://ppg.sagepub.com/content/35/5/613.refs.html*, accessed on 8 June 2016. 'They are effectively a charge for the use of the public resource of environmental quality.' UNEP op cit note 9 at 26.

77 De Sadeleer op cit note 4 at 46.

78 De Sadeleer op cit note 4 at 47.

79 Bhatia op cit note 63 at 56; UNEP op cit note 9 at 24.

80 De Sadeleer op cit note 4 at 47 and 48.

81 De Sadeleer op cit note 4 at 35; IBRD/WB op cit note 2 at 20. Since a financial transfer from polluters to the public authorities is intended to spare the community from having to assume environmental liability, the proceeds of charges should primarily be allocated to the tasks of prevention, control, monitoring and clean-up carried out by public authorities. De Sadeleer op cit note 4 at 47 and 48.

82 Fiscal measures can be used to modify behaviour through either the stick of taxing undesirable activities or the carrot of tax savings for desirable activities. Sanford E. Gaines and Richard A. Westin *Taxation for Environmental Protection: A Multinational Legal Study* (1991) 10; Fasil Nahom *Constitution for A Nation of Nations: The Ethiopian Prospect* (1997) 200; Pitrone op cit note 5 at 127.

83 Susan Wolf/ Anna White/ Neil Stanley *Principles of Environmental Law* 3 ed (2002) 472; Philippe Sands et al *Principles of International Environmental Law* 3 ed (2012) 126.

84 De Sadeleer op cit note 4 at 47.

measures,[87]adoption of products that cause less pollution, development of less-polluting products and reduction of consumption.[88]

4.5 Base of Environmental Tax

Environmental tax bases should be targeted to the pollutant[89] or polluting behaviour.[90] Using the tax to increase the market cost of the polluting activity helps to incentivise the full range of potential abatement options.[91]

Alternatively, when taxing the pollutant directly is not administratively feasible, a close proxy for the polluting activity can provide a good tax base.[92] Nevertheless, it is important to note that levying the tax:[93]

a. at higher levels of the supply chain would not treat the full range of solutions equally;
b. on intermediate goods constitutes an implicit tax that may not be transparent and can contribute to misspecification of tax rates.

Moreover, tax reform should take care of statutory incidence, which refers to who legally pays the tax, as well as economic incidence, which refers to who really bears the burden of the tax.[94]

---

85 Shifting the production structure and consumption pattern into an environmentally friendly one through a pricing system that signals the true environmental costs of goods and services. Kosonen op cit note 2 at 1; Bell & McGillivray op cit note 33 at 239; De Sadeleer op cit note 4 at 47; OECD (2001) op cit note 59 at 20; IBRD/WB op cit note 2 at 36.

86 Encouraging the innovation of cleaner solutions and abatement technologies in response to the prices put on environmental damage. Kosonen op cit note 2 at 1; Pigouvian taxes have the dynamic property of creating an incentive for entrepreneurs to develop more efficient ways to reduce pollution. Alm & Banzhaf op cit note 10 at 179; Kolstad op cit note 8 at 151. Environmental taxes generate investment flows or revenues that can be reinvested to reduce pollution by upgrading outdated production processes. Stewart op cit note 8 at 174; UNEP op cit note 9 at 23.

87 Creating an incentive for polluters to limit environmentally harmful activities and to reduce their residual level and their excessive use of natural resources. Stewart op cit note 8 at 175-6; UNEP op cit note 9 at 23.

88 OECD Environmental Taxation: A Guide for Policy Makers (2011) 4, available at *https://www.oecd.org/env/tools-evaluation/48164926.pdf*, accessed on 31 May 2018.

89 See the definition of pollutant in FPCP op cit note 12 Art 2(11); AAEPCR op cit note 14 Art 2(12).

90 OECD (2011) op cit note 88 at 4.

91 Full range of potential abatement options encompasses cleaner production processes; end-of-pipe abatement; adoption of existing products which cause less pollution; development of new, less-polluting products; and reducing output or consumption. OECD (2011) op cit note 88 at 4.

92 OECD (2011) op cit note 88 at 4.

93 OECD (2011) op cit note 88 at 4.

94 Kosonen op cit note 2 at 2.

4.6 Scope of Environmental Tax in a Federal System

A well-drafted tax law has to precisely spell out all the matters that are within its scope.[95] The scope of environmental tax is appropriate when it is as broad as the scope of the environmental damage being addressed.[96]

The scope of environmental tax has implications for the level of political jurisdiction that imposes the tax.[97] Accordingly, if a fully functioning federal system[98] offers some choice as to the level of government that should take action to reduce environmental pollution, the first and most important principle is the geographic scope of the externality. If the effects of waste fall within the same jurisdiction as the source, then local governments are probably best situated to address the externality. However, if the waste has significant transboundary effects, then the national government is better positioned to address it.[99] The second principle is that the instrument should be consistent with the fiscal needs of the level of government.[100]

4.7 Rate of Environmental Tax

According to Pigou, the optimal tax rate is where the marginal benefit of abatement equals the marginal cost of abatement.[101] The increasing and lowering of tax rates is one of the instruments of manipulating the fiscal policy of a government.[102]

---

95 Thuronyi op cit note 15) 2.

96 OECD (2011) op cit note 88 at 5.

97 OECD (2011) op cit note 88 at 5.

98 The term 'federal' comes from the Latin word foedus, meaning 'treaty.' Federation is a dual polity where the distribution of power between the federal and state governments is strictly constitutional. Fasil Nahom op cit note 82 at 36. Fiscal federalism is a process of redistribution of fiscal decision-making power across multi-levelled governments in an effort to achieve sustainable development. Abu Girma Moges 'An economic analysis of fiscal federalism in Ethiopia' (2003) *International Conference on African Development Archives Paper* 60 at 1, available at *http://scholarworks.wmich.edu/africancenter_icad_archive/60*, accessed on 13 June 2016. Fiscal decentralisation consists primarily of devolving revenue sources and expenditure functions to lower tiers of government. Luiz R. De Mello, Jr 'Fiscal decentralization and intergovernmental fiscal relations: A cross-country analysis' (2000) 28(2) at 365, available at *http://biblioteca.unmsm.edu.pe/redlieds/recursos/archivos/gestionestado/de%20mello.pdf*, accessed on 30 May 2018. 'What makes a complete or incomplete federation good or bad is (a) whether the specific federation is pragmatically tailored to fit the situation and solve the persistent problems that may otherwise find undesirable solutions and (b) whether it was fairly and properly implemented.' Fasil Nahom op cit note 82 at 38. It is one of the most important factors that determine the distribution of tax law-making powers. Vanistendael op cit note 72 at 49.

99 Alm & Banzhaf op cit note 10 at 196-197.

100 Alm & Banzhaf op cit note 10 at 197. Local governments should rely predominantly upon user charges and taxes on immobile tax bases. Ibid at 187. Local governments should rely predominantly upon user charges that should be used to finance goods that provide measurable benefits to identifiable individuals within their jurisdiction, and taxes should be used to finance local services for which it is difficult to identify individual beneficiaries. Ibid.

101 Pigou op cit note 6.

Since environmental taxes are part of the environmental policy instrument tool box, their tax rates should be in line with environmental policy objectives.[103] Similarly, to reach an environmental objective, it is important that the rate of an environmental tax is set at a correct level. A levy that is too low will not be able to fully correct a distortion in the market, while a levy that is too high replaces one distortion with another.[104]

5. Administration of Environmental Tax

The polluter-pays principle relies on the creation of appropriate national institutions that are entrusted with integrated environmental protection and management mandates, and on the establishment and use of a range of administratively feasible environmental taxes.[105]

An environmental tax is not as expensive to administer and implement as command and control regime instruments,[106] and it fits with the idea that the state should not seek to interfere in every facet of life.[107] Correspondingly, its use is described as an *evolution* in environmental management,[108] and its operation relies on an effective fiscal administration.[109] Thus, its design

---

102 Fasil Nahom op cit note 82 at 200. 'To encourage certain activities and to discourage others, taxes are an age-old tool in the hands of government.' Ibid.

103 Rodi & Ashiabor op cit note 71 at 70.

104 Commission of the European Communities 'Environmental taxes and charges in the single market' (1997) COM (97) 9 final, 1, available at*aei.pitt.edu/4785/,* accessed on 30 April 2018. 'The risk of overtaxing or under-taxing is one that has to be carefully avoided.' Fasil Nahom op cit note 82 at 199-200. The tax rate should generally be set to reflect society's value of the environmental damage, other negative spillover effects of the activity and the need to raise public revenues. Ibid at 5. When an environmental charge fulfils a redistributive function, the charge should be proportional to the pollution and the environmental risk created by commercialisation. De Sadeleer op cit note 4 at 46 and 47. 'The charge must, in effect, correspond as closely as possible to the environmental risk created by commercialization.' Flat-rate tax regimes are therefore incompatible with the polluter-pays principle. De Sadeleer op cit note 4 at 47. It is appropriate that costs be allocated in such a way as to reflect the real costs to the environment of the generation and management of waste. Directive 2008/98/EC on Waste op cit note 7 Preamble No 25. In accordance with the polluter-pays principle, the costs of waste management shall be borne by the original waste producer or by the current or previous waste holders. Ibid Art 14(1).

105 UN 'Stockholm declaration on the human environment' (1972) Principle 13 and 17, available at *www.un-documents.net/aconf48-14r1.pdf,* accessed on 24 February 2016; UN Rio Declaration op cit note 7 Principle 16; De Sadeleer op cit note 4; Alm & Banzhaf op cit note 10 at 187.

106 Wolf, White & Stanley op cit note 83 at 472; Murty op cit note 6 at 129; Andrew Jordan, Rudiger K.W. Wurzel & Anthony R. Zito, '"New"' instruments of environmental governance: Patterns and pathways of change' (2003) 26(2) *Environmental Politics*, 12:1, 1-24, available at <*doi: 10.1080/714000665*>, accessed 20 November 2015 at 13; European Environmental Agency (EEA) 'Environmental taxes: Implementation and environmental effectiveness' 1996 at 17, <http://www.eea.europa.eu/publications> accessed 20 November 2015.

107 Jordan, Wurzel & Zito op cit note 106 at 14.

108 Jordan, Wurzel & Zito op cit note 106 at 4; Nathalie Chalifour, Maria Amparo Grau-Ruiz & Edoardo Traversa 'Multilevel governance: The implications of legal competences to collect, administer and regulate environmental tax instruments' in Janet E. Milne & Mikael Skou Andersen (eds) *Handbook of Research on Environmental Taxation* (2014) 253.

109 Barde (1994) op cit note 62 at 3.

should be simple, both to administer and to comply with,[110] and it has to meet the test of administrative feasibility.[111]

In a formal sense environmental taxes are taxes, and their administration should be carried out by the *tax authorities* according to general tax procedure. Substantively, however, their administration may not be possible without a certain know-how possessed only by *environmental authorities*. Thus, adequate legal design requires the recognition of environmental tax as part of the tax system[112] and cooperation between tax and environmental authorities.[113]

In parallel, the distribution of taxing powers and environmental competencies is important for a clean design of environmental tax. However, there is a problem when different levels of government are responsible for designing and applying the tax expenditure and for supervising environmental requirements that have to be met in order for the tax incentive to be applied. So, the distribution of competencies will only work if there is loyal cooperation and mutual trust.[114]

Regardless of how power is distributed, problems of implementation can arise. These problems are due to administrative complexity, inconsistencies within the existing legal framework and design flaws involving a mismatch between the type of instrument chosen and the nature of the problem targeted.[115]

The fact that environmental policies usually originate and are elaborated in different settings can easily create *contradictions, duplications, insufficiencies and imperfections* in their design, assessment, review and implementation. So when environmental interventions are required at multiple levels, coordination is required at three levels: horizontally, vertically and in time.[116]

Correspondingly, while introducing new taxes, *strategic and best use of existing institutional capabilities* can establish allies within the government that may be necessary to offset the potentially powerful interests that benefit from a lack of environmental controls.[117] Concurrently, since institutions form and adapt slowly, in the process of investing in certain norms, values and

110 Alm & Banzhaf op cit note 10 at 188.

111 Ibid at 187.

112 Chalifour, Grau-Ruiz & Traversa op cit note 108 at 271.

113 Pedro M. Herrera Molina 'Design options and their rationales' in Janet E. Milne & Mikael Skou Andersen (eds) *Handbook of Research on Environmental Taxation* (2014) 95.

114 Molina op cit note 113 at 98-99.

115 David O'Connor 'Applying economic instruments in developing countries: From theory to implementation' (2001) *Environ Dev Econ* at 92, available at *http://journals.cambridge.org/abstract_S1355770X99000078*, accessed 22 June 2015.

116 Chalifour, Grau-Ruiz & Traversa op cit note 108 at 263-4.

117 UNEP op cit note 9 at 51; Barde op cit note 62 (1994) at 25.

cultures,[118] phased implementation of environmental tax offers both public and private institutions a grace period for learning and adjusting to the new rules.[119]

Last but not least, from the outset, environmental tax must be backed up by governmental *monitoring and enforcement*.[120]

6. Public Goods and Environmental Public-Private Partnership

Indivisible goods, whose benefit cannot be priced and to which the principle of exclusion does not apply, are called pure public goods. Pure private goods, on the other hand, are completely divisible, and market price and the principle of exclusion apply to them in full measure.[121]

In reality, since most goods possess elements of both 'publicness' and 'privateness' and the difference between goods is mostly of degree and not of kind, it is highly difficult to come across goods that fully satisfy all the characteristics of pure public and private goods.[122]

Concurrently, as regards quasi-public goods, which are neither pure public nor pure private, the role of the state should be limited to those goods that have more of a public nature while predominantly private ones should be left to the private sector and the market mechanism.[123]

Within this vein, public-private partnership refers to the transfer of a good or a service currently provided by the public sector, either in whole or in part, to the private sector,[124] and it is an ideal means for the public sector to complete infrastructures and to focus on its priorities by exploiting the comparative advantages of its well-established and diverse experience, capacity and affordability.[125]

Subsequently, environmental governance must acknowledge the roles of public-private partnership, and it should not simply view it in instrumental terms as a means of providing

118 Jordan, Wurzel & Zito op cit note 106 at 20.

119 O'Connor op cit note 115 at 92 and 107.

120 Alm & Banzhaf op cit note 10 at 192 and UNEP op cit note 9 at 51.

121 Bhatia op cit note 63 at 31.

122 ibid at 7.

123 ibid at 8.

124 M. Massoud and M. El-Fadel, 'Public–Private Partnerships for Solid Waste Management Services' (2002), Environmental Management Vol. 30, No 5 at 621.

125 Agenda 21 op cit note 7 at Chapter 27; Daniela Parvu and Cristina Voicu-Olteanu, 'Advantages and Limitations of the Public–Private Partnerships and the Possibilities of Using them in Romania' (2004) at Abstract, Transylvanian Review of Administrative Sciences, 27E/2009 pp. 189-198, available at *www.ucv.ro/pdf/invatamant/educatie/scoala_doctorala/pirvu.../2.pdf*, accessed on 10 March 2016.

environmental infrastructure and services, but also as an arrangement in which environmental norms of concern are formulated and replicated.[126]

7. The Role of Public Interest Litigation in the Context of Environmental Justice

Environmental justice is one of the goals of sustainable development, and public interest litigation is one of the innovative techniques for its implementation.[127]

Public interest litigation is described as legal tools that allow individuals, groups and communities to challenge government decisions and activities in a court of law or any other competent body with judicial power for the enforcement of public interest.[128]

When there is market failure, states are expected to protect the environment through the use of taxation and the command-and-control instruments of the polluter-pays principle.[129] Simultaneously, in seeking to hold states responsible for environmental pollution, public interest litigation could follow either a fundamental rights approach or a duty of care method.[130]

Correspondingly, the historical use of public interest litigation within the context of environmental justice shows its potential role in the struggle against waste mismanagement in both common and civil law jurisdictions of developed and developing countries.[131] Thus, the application of public interest litigation in combating unsustainable waste management is not context-specific, and it can be stretched across all legal systems.

---

126 Tim Forsyth, 'Building Deliberate Public–Private Partnerships for Waste Management in Asia' (2005) at 429, Science Direct Vol. 36, Issue 4, available at *www.sciencedirect.com*, accessed on 10 March 2016.

127 Providing access to justice for all and building effective, accountable and inclusive institutions at all levels is one of the goals of sustainable development. 2030 Agenda for SD op cit note 13 at 12 Goal 16. Sound governance and enforcement of the environmental rule of law are crucial to delivering the 2030 Agenda for Sustainable Development. George (Rock) Pring & Catherine (Kitty) Pring *Environmental Courts and Tribunals* (2016) III, available at *http://wedocs.unep.org/bitstream/handle/20.500.11822/10001/environmental-courts-tribunals.pdf?sequence=1*, accessed on 11 June 2018.

128 'Public interest litigation is a newly evolving concept in the field of adjudication. Public interest litigation means litigation in interest of the public. … The raison d'être of public interest litigation is to break through the existing legal, technical and procedural constraints and provide justice, particularly social justice to a particular individual, class or community, who on account of any personal deficiency or economic or social deprivation or state oppression are prevented from bringing a claim before the court of law.' Faqir Hussain 'Public interest litigation in Pakistan' (1993) *Sustainable Development Policy Institute* at 1, available at *https://www.sdpi.org/publications/files/W5-Public%20Interest%20Litigation.pdf*, accessed on 2 July 2018.

129 De Sadeleer op cit note 4 at 21; IBRD/WB op cit note 2 at 12, 17 and 20; Stewart op cit note 8 at 174, 176 and 179; Kolstad op cit note 8 at 151; Bell & McGillivray op cit note 33 at 240.

130 Oliver van Geel op cit note 8 at 64.

131 Ibid.

8. The Legal Framework of Environmental Protection, Management and Tax Governance in Ethiopia

Ethiopia is committed to a federal system,[132] the idea of sustainable development,[133] sustainable waste management,[134] the polluter-pays principle,[135] the introduction of environmental taxes,[136] the paradigm of public-private-partnership[137] and public interest litigation within the context of environmental justice.[138] Correspondingly, this section is allocated to appraise the legal framework of its environmental protection, management and tax governance.

8.1 Scheme of Common but Differentiated Environmental Responsibilities in Ethiopia

In Ethiopia natural resource and environmental management activities are required to be integrated laterally across all sectors and vertically among all levels of organisations.[139]

Consequently, Ethiopia is committed to fostering common but differentiated responsibilities that avoid conflicts of interests and duplication of efforts by assigning responsibilities to separate organisations for environmental and natural resource development and management activities on the one hand and environmental protection, regulation and monitoring on the other.[140]

Concurrently, it aims to exploit the existing institutions to the maximum extent and to determine their framework using decentralisation, harmonisation, integration and minimisation of cost.[141]

8.2 Environmental and Fiscal Federalism in Ethiopia

In Ethiopia the federal government has the mandate to enact specific laws on the utilisation and conservation of land and other natural resources.[142] Moreover, it has the duty to administer and enact specific laws on the utilisation and conservation of the waters/rivers and lakes linking two

132 Supra note 13.
133 Supra note 12.
134 Supra note 13.
135 Supra note 14.
136 Supra note 16 and 17.
137 Ethiopia Peoples' Revolutionary Democratic Front (EPRDF) Policy Manual (2011); NCS II op cit note 12 no 1.5(40) (b) (i), 3.6.2(123) and (124) (d); The Conservation Strategy of Ethiopia Volume III: Institutional Framework and Operational Arrangements (CSE III) no 4.2 (66) (d); 2.2(12) (c) and 13(e); See also EPE op cit note 12 no V 5.1 (b).
138 Supra note 15.
139 EPE op cit note 12 no 2.3 (p) and (s).
140 FEPOEP op cit note 12 the Preamble; DPDEOFDREA op cit note 16 Art 4 (33(1) (f)); See also EPE op cit note 12 no V 5.1 (e); CSE III op cit note 137 no 13(a).
141 EPE op cit note 12 no V, 5.1, c, d, (i), (ii), (iii) and (iv).
142 FDREC op cit note 11 Art 55(2) (a).

or more states or crossing its national boundaries.[143] Concurrently, states are bound 'to administer land and other natural resources in accordance with the federal laws.'[144]

Concomitantly, the federal government sets the minimum threshold of environmental standards, and states have the duty to ensure the implementation of the federal standards or their own no less stringent ones.[145]

In parallel, subject to Ethiopia's federal, state, concurrent and undesignated powers of taxation, the federal and state tiers are bound to share revenue under the federal arrangement, and they have the duty to bear their respective financial expenditures.[146] In addition, they have the duty to ensure that any tax is related to the source of revenue taxed,[147] and they must, in line with the principle of fidelity to sources, ensure that the tax does not adversely affect their relationship.[148]

8.3 The Federal and Addis Ababa Administration Environmental Protection, Management and Tax System

8.3.1 Federal and Addis Ababa Administration Environmental Protection System

A. The Federal Environmental Protection System

Under the federal government, the Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE) has the duty to enforce the *federal* environmental policies and laws and to spearhead the assurance of environmental protection.[149] Concomitantly, it is bound to avoid overlaps, waste and gaps in their implementation[150] and where necessary, *delegate* part of its mandates to other federal/regional organs.[151] In addition,

143 ibid Art 51(11) and 55(2) (a).

144 ibid Art 52(2) (d).

145 FPCP op cit note 12 Art 6(1) and (4); FEPOEP op cit note 12 Art 15(2); The Addis Ababa City Government Executive and Municipal Service Organs Re-establishment Proclamation (AAEMSORP), no 35/2012, Addis Neg. Gaz., 4th Year, no 35, Art 9(1).

146 FDREC op cit note 11 Art 51(10), 52(2)(e), 55(11), 94(1), 95 and 96-99; The House of Federation of the Federal Democratic Republic of Ethiopia, the Federal Budget Grant Distribution Formula (HFFDRE: FBGDF) (2012/13–2016/17) at 70 and 118.

147 FDREC op cit note 11 Art 96-99, 100 (1).

148 FDREC op cit note 11 Art 100 (2).

149 EPE op cit note 12 no 5.3 (c); DPDEOFDRE op cit note 16 Art 10 (1) (b); FEPOEP op cit note 12 Art 5.

150 DPDEOFDREA op cit note 16 Art 4 (33(1) (f)).

151 DPDEOFDRE op cit note 16 Art 10 (7), FEPOEP op cit note 12 Art 6 (24).

1. The MEFCCE has the mandate to formulate *environmental standards*,[152] and states are bound to implement the federal environmental standards or their own no less stringent ones,[153]
2. Being *sector neutral*,[154] the MEFCCE has the mandate to *establish a federal environmental impact assessment* (EIA) system for projects that are subject to licensing, execution and supervision by a federal agency or that are likely to produce trans-regional impact. As a corollary, it is responsible for evaluating and monitoring the implementation of their EIA study and environmental management plans, respectively,[155]
3. Where projects are subject to federal licensing, execution and supervision or when they are likely to produce trans-regional impact, they are subject to the MEFCCE permit, regulation and audit system,[156] and
4. The MEFCCE has, in consultation with the competent agencies, the duty to propose incentives/disincentives to discourage practices that may hamper the sustainable use of natural resources and/or the prevention of environmental degradation/pollution.[157]

B. Addis Ababa Administration Environmental Protection System

Subsequent to its duty to establish an independent environmental agency that regulates and protects the environment,[158] Addis Ababa Administration (AAA) has established Addis Ababa Environmental Protection Authority (AAEPA) with a duty to ensure the federal environmental standards or its own no less stringent ones in its jurisdiction.[159] In addition,

1. Being sector neutral, the AAEPA is bound to review the EIA studies of projects that are not subject to federal licensing, execution and supervision and those that are unlikely to produce trans-regional impact,[160]
2. It has the mandate to grant licenses and follow up on the compliance of industrial, manufacturing and service delivery organisations in the AAA,[161]

---

152 FEPOEP op cit note 12 Art 6(7); FPCP op cit note 12 Art 6(1) (e).

153 FPCP op cit note 12 Art 6(4) and FEPOEP op cit note 12 Art 15(2); AAEMSORP op cit note 145 Art 9(1).

154 CSE III op cit note 137 no 4.2.1(70).

155 DPDEOFDREA op cit note 16 Art 4 (33(1) (b) (e)); FEPOEP op cit note 12 Art 6(4) and (5); FEIAP op cit note 12 Art 14.

156 FEPOEP op cit note 12 Art 6(5); FEIAP op cit note 12 Art 14; PIPCMR op cit note 15 Art 5 and 13.

157 DPDEOFDREA op cit note 16 Art 4 (33) (1)(k); DPDEOFDRE op cit note 16; FEPOEP op cit note 12 Art 6(12).

158 FEPOEP op cit note 12 Art 15(1).

159 AAEPCR op cit note 14 Art 5(2); AAEMSORP op cit note 145 Art 11 (1).

160 CSE III op cit note 137 no 4.2.1(70); FEIAP op cit note 12 Art 14(2); Addis Ababa City Government Environmental Impact Assessment Regulation (AAEIAR), no 21/2006, Addis Neg. Gaz., 4th Year, no 48, Art 17.

3. It has to follow up and control the disposal of industrial residue, by-products and waste in line with the law,[162] and
4. It shall give an emission permit upon the payment of compensation by the permit holder for the damage he causes to the environment based on the polluter-pays principle.[163]

8.3.2 Federal and Addis Ababa Administration Environmental Management System

A. Federal Water Resources Management System

Under the federal government, the Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE) is bound to ensure the implementation of federal laws,[164] to realise permit-based water resources management[165] and to enforce an optimal and equitable allocation and utilisation mechanism of water bodies that link two or more states or cross its territorial boundary.[166]

Correspondingly, with the objective of ensuring the highest social and economic benefits, it is responsible for the planning, management, utilisation and protection of water resources.[167]

Concurrently, it may issue permits for the release of treated waste into water resources and collect effluent charges from the permit holders,[168] prepare directives and standards and determine the manner of use of water resources among various uses and users.[169]

At the same time, it may, when necessary, *delegate* part of its mandates to other federal/regional state organs.[170]

B. Addis Ababa Administration Municipal Waste Management System

In line with the integrated waste *management* legal regime of AAA,[171] Addis Ababa Water and Sewerage Authority (AAWSA) is bound to prepare a master plan for sewerage lines, study sewerage projects, prepare contract documents, identify financial demands and improve the

---

161 PIPCMR op cit note 15 Art 5 and 13; FSIPCE op cit note 12 Art; AAEPCR op cit note 14 Art 14, 15(4), 16, 17, 18, 19 and 20.

162 AAEMSORP op cit note 145 Art 11 (3).

163 AAEPCR op cit note 14 Art 14.

164 DPDEOFDRE op cit note 16 Art 10 (1) (b).

165 See the definition of 'water resource management' in Ethiopian Federal Water Resources Management Proclamation (EFWRMP), no 197/2000, Neg. Gaz., 6th Year, no 25, Art 2(19); ibid Art 6(4).

166 ibid Art 17(1). DPDEOFDRE op cit note 16 Art 26(1) (c).

167 EFWRMP op cit note 165 Art 6(3) and 8(1).

168 ibid Art 13, 22(1) and (2); Ethiopian Water Resources Management Regulation (EWRMR), no 115/2005, Neg. Gaz., 11th Year, no 27 Art 3, 32(1).

169 EFWRMP op cit note 165 Art 8(1).

170 ibid Art 8(2); DPDEOFDRE op cit note 16 Art 10 (7).

171 FPCP op cit note 12 Art 5(1); EPE op cit note 12 no 3.7 (c).

liquid waste disposal system.[172] Additionally, it holds the exclusive rights to provide sewer and sludge services and to install and operate their treatment and disposal system on a fee basis.[173] Subsequently, it is bound to *collect its sanitary service tariff*[174] and to administer its internal and external fund.[175]

In addition, Addis Ababa Cleanliness Administration Agency (AACAA) was established with the mandate to ensure solid waste tax-based integrated solid waste management.[176] Along with this, it has the duty to issue directives,[177] to incorporate alternative service delivery systems, to issue competence certificates and work permits, to introduce a commensurate tariff and its timely payment system and to facilitate contract-based payment to its public-private partners.[178] Concomitantly, it may delegate relevant organs to make timely collection of the sanitary service charge in tandem with their charges and deposit it in its account.[179]

In parallel, Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) was established with the mandate to direct in ownership the solid waste transfer stations, reuse and disposal site projects.[180] As a corollary, it is bound to administer the existing Repi Landfill, introduce a solid waste weigh bridge and propose an implement-upon-approval transfer station and a landfill service charge tariff.[181] Correspondingly, it has the duty to introduce *reduce, reuse, recycle and recover* system and to study and pave the way for the existing landfill to be closed at the end of its service and used for other services in the future.[182]

172 AAEMSORP op cit note 145 Art 59(1) (3) (4) (6).

173 Addis Ababa Water and Sewerage Authority Re-establishment Proclamation (AAWSARP), no 10/1995, Neg. Gaz., 18th Year, no 3.

174 Regulation to Determine and Collect the Sanitary Service Tariff of the Addis Ababa City Government (RDCSSTAACG), Regulation no 25/2009, Addis Neg. Gaz., 2nd Year, no 25, Art8(1) and (4).

175 AAWSARP op cit note 173 Art 25(1) and (2) (a), (b) and (c).

176 AAEMSORP op cit note 145 Art 55(1) and (3);FPCP op cit note 12 Art 5(1); RDCSSTAACG op cit note 174 Art 3(2); Addis Ababa Cleanliness Administration Agency Sanitation Service Delivery Standard (AACAA SSDS) (2013/14).

177 AAWMCDR op cit note 17 Art 36.

178 AAEMSORP op cit note 145 Art 55(5), (9), (10), (11) and (12); RDCSSTAACG op cit note 174 Art 7(5).

179 AAWMCDR op cit note 17 Art 21(7); AAEMSORP op cit note 145 Art 55(13).

180 AAEMSORP op cit note 145 Art 58(1); SWMP op cit note 14 Art 14.

181 ibid Art 58(2), (4) and (7).

182 ibid Art 58(3) and (6).

8.3.3 Federal and Addis Ababa Administration Tax System

1. Federal Tax System

A. The Federal Tax Administration

Under the federal tax system, the Ethiopian Revenues and Customs Authority (ERCA) is established with the objective to introduce a modern, equitable, efficient, timely and effective revenue assessment and collection system.[183] Simultaneously, it, inter alia, has the power and duties to:

Establish and implement a modern revenue assessment and collection system;[184]

Provide, based on rules of transparency and accountability, efficient, equitable and quality service within the sector;

Properly enforce incentives of tax exemptions given to investors and ensure that such incentives are used for the intended purposes;[185]

Carry out valuation of goods for the purpose of tax assessment and determine and collect the taxes;[186]

Moreover, it has the mandate to investigate customs and tax offenses, to inspect and seize documents in the possession of any person that are required for the enforcement of customs and tax laws; and to institute and follow up on criminal proceedings in courts.[187]

At the same time, it may enter into contracts and international agreements regarding tax and customs administration,[188] issue directives necessary for the implementation of this Proclamation and the regulations issued pursuant to this Proclamation;[189] and perform such other related activities as required for the attainment of its objectives.[190]

183 Ethiopia Revenues and Customs Authority Establishment Proclamation (ERCAEP), no 587/2008, Neg. Gaz., 14th Year, no 44, Art 5 (1), (3) and (4).

184 ibid Art 6(1).

185 ibid Art 6(2).

186 ibid Art 6(4).

187 ibid Art 6(10) and (11). For the discharge of such responsibilities, it may organise its own prosecution and investigation units and supervise their performance. 'The powers of investigation and prosecution given to the Federal Police and Federal Prosecutors under the Criminal Procedure Code and other laws are hereby given to the Authority's Investigators and Prosecutors regarding customs and tax offences.' ibid Art 16(1).

188 ibid Art 6(16).

189 ibid Art 20(1).

190 ibid Art 6(19).

B. The Federal Tax Dispute Settlement

Under the federal tax system, a tax payer dissatisfied with a tax decision may file a notice of objection to the decision, in writing, with the Review Department of ERCA within 21 days after receiving notice of the decision.[191]

The Review Department make recommendations to the ERCA, and after having regard to the recommendations of the Review Department, the ERCA makes an 'objection decision'[192] to allow the objection in whole or part, or to disallow it.

When the ERCA fails to give an objection decision within 180 days or when the taxpayer dissatisfied with the decision, he may file a notice of appeal with the Tax Appeal Commission (Commission).[193] The Commission shall hear and determine the appeal and make a decision.[194] If the appeal relates to a tax assessment, the Commission may make a decision to:[195]

a) Affirm, or reduce, or otherwise amend the tax assessment; or
b) Remit the tax assessment to the Authority for reconsideration in accordance with the directions of the Commission

If an appeal relates to any other appealable decision, the Commission may make a decision to affirm, vary or set aside the decision, or remit the decision to the ERCA for reconsideration in accordance with the directions of the Commission.[196]

A party who is dissatisfied with the decision of the Commission may, within 30 days after receiving notice of the decision, file a notice of appeal to the Federal High Court.[197] An appeal to the Federal High Court shall be made on a question of law only, and the notice of appeal shall state the question of law that will be raised on the appeal.[198]

The Federal High Court shall hear the appeal and may:[199]

a) Decide to affirm the decision of the Commission;
b) Decide to set aside the decision of the Commission:

---

191 Federal Tax Administration Proclamation of Ethiopia (FTAPE), no 983/2016, Neg. Gaz., 22nd Year, no 103, Art 54(1) and 55

192 ibid Art 55(4).

193 ibid Art 55(7) and 56(1). The president of the Tax Appeal Commission is appointed by the Prime Minister, and the Commission is accountable to the Prime Minister. ibid Art 86(2) and (3).

194 ibid Art 91(1).

195 ibid Art 91(5).

196 ibid Art 91(7).

197 ibid Art 57(1).

198 ibid Art 57(4).

199 ibid Art 57(5)

1) Make a decision in substitution of the decision of the Commission; or
2) Remit the decision to the Commission or Authority for reconsideration in accordance with the directions of the Court; or

c) Decide to dismiss the appeal; or

d) Make any other decision the court thinks appropriate.

A party who is dissatisfied with the decision of the Federal High Court may, within 30 days after receiving notice of the decision, file a notice of appeal to the Federal Supreme Court, and it may affirm or set aside the decision of the Federal High Court.[200]

Subsequently, those aggrieved with the decision of the Supreme Court or the High Court have one last opportunity to seek review in the Cassation Division of the Federal Supreme Court if the decisions of the Supreme Court or the High Court 'contain fundamental error of law.'[201]

Finally, the ERCA shall, within 30 days after receiving notice of the decision of the Tax Appeal Commission, Federal High Court or Federal Supreme Court, take such action as is necessary to give effect to the decision.[202]

2. Addis Ababa Administration Tax Administration and Tax Dispute Settlement

In the AAA, Addis Ababa Revenue Authority (AARA) has the mandate to set up a modern, efficient and effective tax determination and collection system; undertake studies and recommend *new sources* of revenue; and follow up on their implementation upon approval.[203] Parallel to this, it is expected to prevent tax avoidance, evasion and illicit activities;[204] share valuable tax collection experiences from federal, regional states and foreign governments;[205] and conclude *agreements* regarding tax administration.[206] Moreover, it must collect a sanitary service tariff with *trade license, chat and other taxes*.[207]

On the other hand, AAA may fully/partially *delegate* the powers of AARA to an appropriate federal government body.[208] Accordingly, it has delegated its overall power to ERCA,[209] and the

200 ibid Art 58(1).
201 See Federal Courts Proclamation (FCP), no 25/1996, Neg. Gaz., 2nd Year, no 13, Art 10.
202 FTAPE op cit note 191 Art Art 60(1).
203 AAEMSORP op cit note 145 Art 13; AARAR op cit note 17 Art 8(1); 9(1), (2) and (7).
204 AARAR op cit note 17 Art 8(3).
205 ibid Art 8(5).
206 ibid Art 9(16).
207 RDCSSTAACG op cit note 174 Art 9(1).
208 AAEMSORP op cit note 145 Art 13(1).

Addis Ababa Revenues and Customs Branches' Support and Follow-up Directorate has been established as a *liaison office* between AAA and ERCA.[210] Consequently, while ERCA runs the *operational activities* and AAA covers the cost of operation of the liaison office, Addis Ababa Bureau of Finance and Economic Development (AABFED) administers the revenue collected.[211]

As a corollary, the tax administration and tax dispute settlement of the AAA are aligned to the federal tax system under section 8.3.3(1).

E. Interim Conclusion: Normative Framework for the Viability of Greening the Ethiopian Tax System at the Confluence of Environmental Justice and Development

In this research, greening the Ethiopian tax system at the confluence of environmental justice and development *is considered to be viable* when:

1. The introduction of environmental taxes to Ethiopia plays an instrumental role in the realisation of the polluter-pays principle,
2. There is cautious design of the source, base, scope and rate of environmental taxes,
3. There is administrative feasibility for the implementation of environmental taxes, and
4. There is effective public interest litigation.

In parallel, subject to the conceptual and legal framework under section D of the introduction, and to the normative testing framework of each article in this PhD dissertation, in this research:

1. The introduction of environmental taxes to Ethiopia is considered to play an instrumental role in the realisation of the polluter-pays principle when the taxes play distributive and incentive roles,[212]
2. The design of solid waste, landfill, sewerage service and effluent charges is considered to be viable in the achievement of sustainable waste management when their:[213]
    1) Source is subject to the principle of legality, i.e., as long as it is set up by legislative acts;

209 Memorandum of Understanding between Addis Ababa Administration and Ethiopian Revenues and Customs Authority (MUBAAAERCA) (September 2011).

210 ibid.

211 ibid.

212 See details in Chapter Two (the first article) of the PhD dissertation: M.T. Gebregiorgs, 'What are the Instrumental Roles of the Introduction of Environmental Tax in the Realisation of the Polluter-Pays Principle in Ethiopia?'

213 See details in Chapter Three (the second article) of the PhD dissertation: M.T. Gebregiorgs, 'Towards Sustainable Waste Management through Cautious Design of Environmental Taxes: The Case of Ethiopia.'

2) Scope is appropriate, i.e., when it is as broad as the scope of the waste being addressed and it is consistent with the fiscal needs of the federal and regional waste management organs;
3) Base efficient, i.e., when it is targeted to the waste or waste-generating behaviour, which helps to incentivise the full range of waste abatement options and can contribute to specification of an optimal tax rate; and
4) Rate is optimal, i.e., when it is commensurate with the cost of waste management and it creates an incentive for the realisation of sustainable waste management.

3. Introducing an environmental tax is administratively feasible when five critical conditions exist. The first condition is that environmental standard formulation, environmental impact assessment, permit, regulation, municipal waste management and tax mandates must conform to the paradigms of common but differentiated responsibilities-based environmental and fiscal federalism. The second condition is that environmental governance must accommodate public-private partnerships. The third condition is the existence of effective solid waste, landfill, sludge, sewer, effluent and emission tax collection systems. The fourth is the existence of environmentally friendly collection, treatment and disposal for municipal and hazardous solid waste, sludge cake, industrial effluent and sewer and sludge-based waste. And lastly, the fifth condition is the existence of an operational permit system for hazardous solid waste transportation and disposal, sewer use, effluent disposal and emission release[214] and
4. Public interest litigation is effective when it has the potential to encourage the federal and regional environmental protection and management organs of Ethiopia to implement environmental tax and command-and-control instruments of the polluter-pays principle within the context of environmental justice.[215]

F. Organisation of the Dissertation

This PhD dissertation is article-based and is organised into five parts. After this introduction, in the second chapter, the first article assesses the instrumental roles of the introduction of environmental taxes in the realisation of the polluter-pays principle in Ethiopia. In the third

214 See details in Chapter Four (the third article) of the PhD dissertation: M.T. Gebregiorgs, 'Introducing an Administratively Feasible Environmental Tax System in Ethiopia.'

215 See details in Chapter Five (the fourth article) of the PhD dissertation: M.T. Gebregiorgs, 'The Role of Public Interest Litigation in the Achievement of Sustainable Waste Management in Ethiopia.'

chapter, the second article examines the viability of the design of solid waste, landfill, sewerage service and effluent charges in the achievement of sustainable waste management in Ethiopia. In the fourth chapter, the third article assesses the administrative feasibility of the introduction of environmental taxes in the implementation of the polluter-pays principle in Ethiopia. In Chapter Five, the fourth article appraises the role of public interest litigation in encouraging the federal and regional environmental protection and management organs of Ethiopia to implement environmental tax and the command-and-control instruments of the polluter-pays principle as means of achieving sustainable waste management in Ethiopia. Finally, Chapter Six presents the conclusion of the research.

Chapter Two:

What are the Instrumental Roles of the Introduction of Environmental Tax in the Realisation of the Polluter-Pays Principle in Ethiopia?

WHAT ARE THE INSTRUMENTAL ROLES OF THE INTRODUCTION OF ENVIRONMENTAL TAX IN THE REALISATION OF THE POLLUTER-PAYS PRINCIPLE IN ETHIOPIA?*

M.T. Gebregiorgs†

This research examines the instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle under the federal jurisdiction of Ethiopia. It is a single country case-oriented comparative research design, and data triangulation is the method used to establish its validity. It first shows the recognition of polluter-pays as a principle, rule and policy to reach the idea of sustainable development. Secondly, it verifies the degradation/pollution-based redistributive, preventive and curative functions of the polluter-pays principle. Thirdly, it indicates the variations of the threshold-bound distributive and incentive bases of environmental tax according to the functions of the polluter-pays principle. Fourthly, it demonstrates the instrumental roles of: (1) Municipal and treated hazardous solid wastes, sludge, and sewer charges in covering the cost of their collection, transportation, treatment and disposal; (2) Effluent charges in restoring authorised water resources degradation; (3) Carbon tax and cap-and-trade in restoring authorised air degradation; (4) Consumption taxes in reinforcing an environmentally friendly pattern of consumption; (5) Royalties in encouraging rational use of scarce natural resources. Finally, it implies that the polluter-pays principle is contingent on setting up a range of legally viable and administratively feasible environmental taxes.

* This research is conducted under the affiliation of Tilburg Law School, Tilburg University, Tilburg, The Netherlands; and Mekelle University School of Law, Mekelle, Ethiopia; under the supervision of Professor Dr Jonathan Verschuuren.

† PhD Researcher in the Faculty of Law, Tilburg University, the Netherlands, Email: M.T.Gebregiorgs@tilburguniversity.edu. LL.B, M.A. in Environment and Development, Lecturer in Mekelle University, School of Law.

1 INTRODUCTION

1.1 Background of the research

The judicious use of natural resources is a prerequisite for sustainable development,[1] and green tax reform is a key framework and critical tool of sustainable development.[2] Concomitantly, the polluter-pays principle is one of the main outlines of sustainable development,[3] that guides the actions of public authorities,[4] and it is a framework where environmental protection and environmental taxation meet.[5]

At the same time, the judicious use of natural resources is to a substantial degree determined by a tax structure and a tax constitution that stimulates a judicious use of natural resources. And environmental protection is an important step toward achieving sustainable development.[6]

Price-based instruments were first suggested by Pigou in 1920 in the form of taxes and subsidies to deal with detrimental and beneficial environmental externalities.[7] Subsequently, the Rio Declaration of 1992 endorsed the *internalisation of environmental*

---

[1] Juergen G Bachaus 'Increasing the role of environmental taxes and charges as a policy instrument in developing countries: Some conceptual considerations' (2004) *American Journal of Economics and Sociology* 63(5) 1097.

[2] OECD Environmentally Related Taxes in OECD Countries: Issues and Strategies (2001) 3; UN General Assembly Draft Resolution A/66/L.65, The Future We Want, 24 July 2012.

[3] John Snape and Jeremy de Souza *Environmental Taxation Law: Policy, Contexts and Practice* (2006) 111; OECD Council Recommendation on the Use of Economic Instruments in Environmental Policy (1991) C (90) (Final) 2.3, 177.

[4] Nicolas De Sadeleer *Environmental Principles from Political Slogan to Legal Rules* (2002) 311.

[5] Federica Pitrone *Environmental Taxation: A Legal Perspective* (PhD Dissertation, Universita Luiss Guido Carli, 2013/2014) 130.

[6] Bachaus (n1) at 1097; The International Bank for Reconstruction and Development (IBRD)/The World Bank (WB) *Environmental Fiscal Reform What Should be Done and How to Achieve It* (2005) 17; Katri Kosonen 'Regressivity of environmental taxation: Myth or reality?' (2012) 1; OECD Environmental Fiscal Reform for Poverty Reduction (2005) 12.

[7] M N Murty 'Market based instruments for pollution abatement in India' in Pushpam Kumar (ed) *Economics of Environment and Development* (2005) 130.

costs and the use of *economic instruments* based on the *polluter-pays principle.*[8]

Similarly, OECD has verified that the implementation of environmental taxes is contingent on their compliance with the polluter-pays principle.[9] De Sadeleer and De Lucia also confirmed the interdependence of the polluter-pays principle and environmental tax.[10]

Conversely, parallel to the unique policy, regulatory and institutional frameworks of states,[11] there is no single blueprint for sustainable development,[12] the polluter-pays principle[13] and environmental tax[14] that squarely applies across the board of all jurisdictions.[15]

---

[8] UN 'Rio declaration on environment and development' (1992) Principle 16, available at *www.un.org/documents/ga/conf151/aconf15126-1annex1.htm*, accessed on 8 June 2016; See also OECD Council Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies (1972) C(72)128 (Final), A(4); UN 'Agenda 21' (1992) 2.14(c) and 4.24, *https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf* accessed on 8 June 2016; UN 'Framework convention on climate change (1992) Article 2, *https://unfccc.int/resource/docs/convkp/conveng.pdf,* accessed on 8 June 2016; UN 'Convention on biological diversity' (1992) Article 11, available at *https://www.cbd.int/doc/legal/cbd-en.pdf*, accessed on 8 June 2016; Ethiopia Biological Diversity Convention Ratification Proclamation (EBDCRP), no 98/1994, Negarit Gazeta (Neg. Gaz.), 53rd Year, no 88; UN 'Report of the world summit on sustainable development' (2002) 19(b) and 26(b).

[9] OECD (n3) at 177.

[10] De Sadeleer (n4) at 44 and 46; Vito De Lucia 'Polluter pays principle' (2010) at 2, available at *www.colorado.edu/AmStudies/lewis/ecology/polluterpays.pdf*, accessed on 8 June 2016.

[11] Agenda 21 (n8) at 4.2.5; IBRD/WB (n6) at 3, 41 and 53; UNEP *The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges* (2004) 4.

[12] World Commission on Environment and Development (WCED) 'Our common future' (1987) at 39, available at www.un-documents.net/our-common-future.pdf, accessed on 8 June 2016.

[13] Philippe Sands et al *Principles of International Environmental Law* 3 ed (2012) 228; De Sadeleer (n4) at 305. 'The polluter-pays principle juxtaposes two terms whose meanings appear self-evident at the first glance but become elusive as one attempts to define them.' De Sadeleer (n4) at 305 and 37.

[14] UNEP (n11) at 12.

[15] James Alm and H Spencer Banzhaf 'Designing economic instruments for the environment in a decentralized fiscal system' (2012) *Journal of Economic Surveys* 26(2) 197; Stefan Speck 'Options for promoting environmental fiscal reform in EC Development Cooperation, Country Report Uganda' (2010) 1.

1.2 Statement of the problem

Ethiopia has recognised the right to live in a clean and healthy environment, public ownership of natural resources, the idea of sustainable development, and the polluter-pays principle.[16]

Simultaneously, the government has the duty to develop a national *environmental liability* and *compensation regime* and to introduce *incentives/disincentives* to *discourage practices* that may hamper the *sustainable use of natural resources* and/or the *prevention of environmental degradation/pollution.*[17] Moreover, each of its *urban administrations* has the duty to ensure a *benefit tax-based*[18] *integrated municipal waste management system.*[19] Nonetheless:

(1) Ethiopia's vast natural resources, biodiversity and ecological systems that are sensitive to climate change

---

[16] The Constitution of the Federal Democratic Republic of Ethiopia, Proclamation (FDREC) no 1/1995, Neg. Gaz., 1st Year, no 1 Article 40(3), 43 (1) (3), 44(1) and 92; See details in sections 4, 5 and 7.

[17] Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia (Amendment) Proclamation (DPDEOFDRE), no 803/2013, Neg. Gaz., 19th Year, no 61 Article 4 (33) (1)(k); Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation (DPDEOFDRE), no 691/2010, Neg. Gaz., 17th Year no 1; Federal Environmental Protection Organs Establishment Proclamation (FEPOEP), no 295/2002, Article 6(12); See also Ethiopia's Climate Resilient Green Economy Facility Operational Manual (ECRGEFOM) (2014) 198. Rio Declaration (n8) Principle 13. Because it is ratified by Ethiopia, it is part of its law. FDREC (n16) Article 9(4).

[18] FDREC (n16) Article 100(2). 'Fees and Charges means a payment made by users to public bodies for the supply of goods, rendering of services and use of facilities; and does not include fines and penalties.' Addis Ababa City Government Financial Administration Regulation (AAFAR), no 39/2011, Addis Negarit Gazeta (Addis Neg. Gaz.), 3rd Year, no 39, Article 2(6); See also A Regulation of Revenue Authority of Addis Ababa City Administration (AARAR), no 17/2009, Addis Neg. Gaz., Article 2(5).

[19] Federal Pollution Control Proclamation (FPCP), no 300/2002, Neg. Gaz., 9th Year, no 12, Article 5(1); See 'Municipal Service' in Addis Ababa City Government Revised Charter Proclamation (AACGRCP), no 361/2003, Addis Neg. Gaz., 9th Year, no 86, Preamble, Article 2(4); See 'Sanitary Service' in Waste Management, Collection and Disposal Regulation of the Addis Ababa City Administration Government Regulation (AAWMCDR) no 13/2004, Addis Neg. Gaz., 2nd Year, no 29, Article 2(2); See also Solid Waste Management Proclamation (SWMP), no 513/2007, Neg. Gaz., 13th Year, no 13, Article 4; EWRMP (n26) at 7.

and exploitation[20] are increasingly being eroded due to mismanagement,[21]

(2) Pollution is the major problem of the emerging industrialisation and urbanisation in Ethiopia,[22]

(3) The state of affairs of Ethiopia's market economy is more ideal to rent-seekers than to pro-sustainable development and has no complete scheme of internalisation of externalities,[23]

(4) Sixty to sixty-five per cent of the solid waste of the Addis Ababa Administration is disposed in Repi Landfill, *and* 25-30 per cent is dispersed in rivers and open fields. So it is a source of communicable diseases, detestable odour and hygiene/aesthetic/beauty spoiling trash,[24]

(5) The substandard Repi Landfill located in the Addis Ababa Administration is an open saturated dump without a treatment and drainage system and is generating direct environmental spillover on the city,[25]

(6) In Ethiopia there is a lack of sustainable, reliable and efficient utilisation of water[26] and the average access to a clean and safe water supply is about 17 per cent,[27]

---

[20] Ethiopia Millennium Development Goals Report (EMDGR) (2012), 42.

[21] Environmental Policy of Ethiopia (EPE) (1997) 1.1.

[22] UN Conference on Sustainable Development (Rio+20) National Report of the Environmental Protection Authority of Ethiopia (UN CSD Rio+20 NRE) (2012) 64; WCED (n12) no 14.

[23] Industrial Development Strategy of the Federal Democratic Republic of Ethiopia (IDSFDRE) (2002) 52; Tsegai Brhane Gebretekle *Industrial Pollution Control and Management in Ethiopia: A Case Study on Almeda Factory and Sheba Leather Industry in Tigrai National Regional State* (unpublished PhD dissertation, University of Warwick School of Law, 2015) 89.

[24] Addis Ababa City Government Solid Waste Management Agency Solid Waste Policy (AASWMASWP) (1995) 1; See also Camilla Louise Bjerkli 'Governance on the ground: A study of solid waste management in Addis Ababa, Ethiopia' (2013) 37.4 IJURR at 1277 and 1278.

[25] Ibid, Interview with Alemayehu Neme, Deputy General Manager, City Administration of Addis Ababa Solid Waste Recycling and Disposal Project Office (Addis Ababa, Ethiopia, 16 April 2014 and 7 October 2015); Interview with Ephrem Sisay, Landfill Officer, City Administration of Addis Ababa Solid Waste Recycling and Disposal Project Office (Addis Ababa, Ethiopia, 9 May 2014); The landfills are not well developed and properly managed. UN CSD Rio+20 NRE (n22) at 64.

[26] Ethiopian Water Resources Management Policy (EWRMP) (2001) Introduction.

[27] Ibid.

(7) Ethiopia has serious deficiencies in sanitation and sewage infrastructures, and the majority of its industries are established on the bank of its rivers and streams, which serve as open sewers for their untreated and rampant effluents that fuel respiratory complications, infections, diarrhoea, and other diseases,[28]

(8) The sewer service coverage of the Addis Ababa Administration is not more than 10 per cent, it is vulnerable to random ruptures and it operates on slope-based gravitation,[29]

(9) The Kaliti Waste Water Treatment Plant of the Addis Ababa Administration has a drying bed system, which is dependent on natural processes, and gravitation/slope-based stabilisation pond systems; it is non-compact/land-intensive, and it disposes of the effluent in the trans-regional Akaki River,[30]

(10) Ethiopia is highly vulnerable to climate change and high levels of air pollution in its urban areas. If it pursues a conventional economic development path, in 2030 it will exceed the global target of 1t to 2t per capita emissions,[31]

---

[28] EPE (n21) 1.2; APAP vs. the Federal Environmental Protection Authority of Ethiopia, FDRE First Instance Court, Computer File no 64902, Date 21/2/2007; Merhatbeb Teklemedhn 'The role of public interest litigation in the protection of the environment of Ethiopia: The law and the practice' (2015); Gebretekle (n23); Ministry of Environment and Forest of Ethiopia Assessment of Manufacturing Industries Level of Pollution and Extent of Environmental, Economic and Social Damages (2014). Many rivers around Addis Ababa are polluted with urban waste and industrial waste. UN CSD Rio+20 NRE (n22) at 64.

[29] Interview with Zelalem Ketema, Sewer System Monitoring Case Manager, Addis Ababa Water and Sewerage Authority (Addis Ababa, Ethiopia, 4 January 2016);Interview with Tesfaye Werede, Supervisor of Sewerage System, Addis Ababa Water and Sewerage Authority (Addis Ababa, Ethiopia, 3 April 2014).

[30] Interview with Nuri Muhammed, Waste Water Treatment Case Manager, Addis Ababa Water and Sewerage Authority (Addis Ababa, Ethiopia, 3 April 2014 and 25 December 2015); Interview with Tesfaye Werede, Supervisor of Sewerage System, Addis Ababa Water and Sewerage Authority (Addis Ababa, Ethiopia, 3 April 2014).

[31] Ethiopia's Climate Resilient Green Economy: Green Economy Strategy (ECRGES) (2011) 11; EMDGR (n20) at 42; UN CSD Rio+20 NRE (n22) at 64. Fuel consumption in developing countries is growing by an average of 6

(11) Parallel to severe funding constraints,[32] the public budget is not safeguarded from subsidizing the social costs borne by the public authorities for the provision of specific services for pollution prevention and control.[33]

To sum up, Ethiopia in general and Addis Ababa in particular are exposed to unabated negative externalities associated with irrational use of resources, degradation and pollution.

Thus, this research will appraise the instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle under the federal jurisdiction of Ethiopia.

1.3 Research questions

1.3.1 Basic research question

What are the instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle under the federal jurisdiction of Ethiopia?

---

per cent a year, which is about six times the rate in OECD countries. IBRD/WB (n6) at 85; EPE (n21) 3.9 (a).

[32] UNEP (n11) Executive Summary.

[33] Interview with Nega Getahun, Legal and Insurance Director, Addis Ababa Water and Sewerage Authority (Addis Ababa, Ethiopia, 3 April 2014); Interview with Gemila Mohammed, Waste Water Treatment and Re-use Process Owner, Addis Ababa Water and Sewerage Authority (Addis Ababa, Ethiopia, 4 January 2016); Interview with Dawit Ayele, General Manager, Addis Ababa Cleansing Management Agency (Addis Ababa, Ethiopia, 1 July 2014); See also IBRD/WB (n6) at 31; Interview with Tadele Demeko, Deputy General Manager, Addis Ababa Cleansing Management Agency (Addis Ababa, Ethiopia, 9 May 2014 and 7 October 2015); Interview with Hamere Kebede, Budget and Plan Process Owner, Addis Ababa Cleansing Management Agency (Addis Ababa, Ethiopia, 21 June 2014 and 5 October 2015); Alemayehu Neme (n25).

1.3.2 Specific research questions

(1) What are the different functions and meanings of polluter-pays as a principle, rule and policy to reach the idea of sustainable development?
(2) What are the complementary/exclusive redistributive, preventive and curative functions of the polluter-pays principle?
(3) What are the technical justifications for the introduction of environmental tax?
(4) What are the complementary/combinational instrumental roles of the introduction of solid waste, sludge and sewer charges, effluent charges, carbon tax and cap-and-trade, consumption taxes, and royalties, in the realisation of the polluter-pays principle under the federal jurisdiction of Ethiopia?

1.3.3 Justification and contribution of the research

The best model for each jurisdiction fits the unique combination of its respective context. So an attempt to introduce a well-fitting environmental tax to the federal jurisdiction of Ethiopia has to be preceded by a careful analysis of its instrumental roles within its unique context.

Subject to Ethiopia's environmental federalism, tax harmonisation and standardisation paradigm,[34] the research contributes to the endeavour of identification and crystallisation of a range of tailored federal and local environmental taxes in Ethiopia.

1.4 Methodology

The research is delimited to the self-governing AAA, which is the capital city of Ethiopia, an integral part of the federal jurisdiction

[34] See in general The Federal Government of Ethiopia Financial Administration Proclamation (FGEFAP), no 648/2009, Neg. Gaz., 15th Year, no 56, Article 64(1); FDREC (n16) Article 51(5), 52(2) (d) (e) and 55(2) (a) and (11); FPCP (n19) Article 6(4); FEPOEP (n17) Article 15(2); The Addis Ababa City Government Executive and Municipal Service Organs Re-establishment Proclamation (AAEMSORP), no 35/2012, Addis Neg. Gaz., 4th Year, no 35, Article 9(1).

and accountable to the federal government.[35] Because Ethiopia adheres to environmental federalism,[36] and the tax governance of the Addis Ababa Administration is partly under the jurisdiction of the federal government,[37] the research appraises the common but differentiated environmental governance of both jurisdictions.

Moreover, being a single country case-oriented comparative research design, it makes use of triangulation of concepts that are applicable to other countries and international organisations.

1.5 Organisation of the article

The article is organised into nine sections. The first section deals with the background, statement of the problem, objectives, justification, contribution and methodology of the study. The second section deals with the conceptual review of the nature and functions of the polluter-pays principle and the technical justifications and instrumental roles of environmental tax. The third section deals with the domain and scope of environmental liability. The fourth section deals with the public ownership of natural resources and their permit and/or price-based utilisation. Section five looks at the idea of sustainable development and the protection of the intrinsic and instrumental elements of the environment. Section six appraises the interplay of environmental standards, release, pollutants, degradation, pollution and impact, as well as its implication on the release-based and threshold-bound instrumental roles of environmental tax. Section seven reveals the different functions and meanings of polluter-pays as a principle, rule and policy and its degradation/pollution-based complementary/exclusive redistributive, preventive and curative functions. Section eight demonstrates the threshold-bound

---

[35] FDREC (n16) Article 49(1) (2) (3); AACGRCP (n19) Article 17(1) and 61(2). See the city map at *www.aacc.gov.et.*

[36] FDREC (n16) Article 50(1), 51(5), 52(2) (d) and 55(2) (a); FPCP (n19) Article 6(4); FEPOEP (n17) Article 15(2); AAEMSORP (n34) Article 9(1). The cumulative reading of these provisions clearly implies the scheme of environmental federalism in Ethiopia.

[37] Federal, State, Concurrent and Undesignated Powers of Taxation. FDREC (n16) Article 55(11), 52(2)(e), 96, 97, 98 and 99; See also Ethiopia Revenues and Customs Authority Establishment Proclamation (ERCAEP), no 587/2008,Neg. Gaz., 14th Year, no 44, Article 2(1) and AARAR (n19) Article 2(5).

distributive/incentive instrumental roles of environmental tax in the realisation of the polluter-pays principle. Finally, section nine presents the conclusion and implication of the research.

2 UNDERSTANDING THE FORM, NATURE AND LINKS BETWEEN THE POLLUTER-PAYS PRINCIPLE AND ENVIRONMENTAL TAXES

2.1 Nature and functions of the polluter-pays principle[38]

This section is allocated to a conceptual appraisal of the nature of polluter-pays as a principle, policy and rule and its redistributive, preventive and curative functions.

2.1.1 Nature of the polluter-pays principle

The notion of sustainable development provides the general framework for all environmental issues,[39] and principles of environmental policies and law receive their high moral value from it.[40]

At the same time, principles form a necessary link between legal rules and underlying ideals,[41] and they are the main building blocks in any regulatory system.[42] Moreover, being dynamic beacons in a wild ocean of ever-changing concrete environmental rules:[43]

---

[38] See 'The Polluter-Pays Principle' in OECD (n8). The polluter-pays principle is an institutional manifestation of the opportunity cost of environmental protection. Horst Siebert *Economics of the Environment Theory and Policy*, 7 ed (2008) 164-5.

[39] Philippe Cullet 'Environment and development – the missing link' in Julio Faundez & Celine Tan (ed) *International Economic Law, Globalization and Developing Countries*, (2010) 354.

[40] Verschuuren Jonathan M, Sustainable Development and the Nature of Environmental Legal Principles. (2006) Potchefstroom Electronic Law Journal 9(1) at 52, Available at SSRN: http://ssrn.com/abstract=899537; Stuart Bell and Donald McGillivray *Environmental Law* 7 ed (2008) 54.

[41] Verschuuren ibid at 52. Principles are derived from the fundamental moral principles that law is ultimately grounded in. Klaus Bosselmann *The Principles of Sustainability: Transforming Law and Governance* (2008) 48.

[42] Gebretekle (n23) at 87.

[43] Verschuuren (n40) at 2. The normative character of principles is likely to vary as a function of the legal system in which they are being applied. De Sadeleer (n4) at 305; See also Bosselmann (n41) at 43; John Braithwaite and Peter Drahos *Global Business Regulation* (2001) 15 and 19.

> (1) [P]rinciples can enhance the normative power of statutory rules; (2) [P]rinciples can help to fill in open or unclear statutory rules; (3) [P]rinciples can increase legal certainty and enhance the legitimacy of decision-making; (4) [P]rinciples form the basis for new statutory rules; (5) [P]rinciples give guidance to self-regulation; (6) [P]rinciples create flexibility in the law; (7) [P]rinciples help to implement international obligations; (8) [P]rinciples stimulate the integration of environmental considerations into other policy fields; (9) [P]rinciples are necessary to pursue an ideal.[44]

At the same time, policies are means for target-setting and achieving the goals of public interest affairs.[45] They thus play an important part in the promotion of ideals, announcement of principles[46] and framing of rules that are the climactic act of the policy making process.[47]

Concurrently, while the up-front quality of principles is to determine the realisation of a legally relevant purpose, the up-front characteristic of rules is to establish a behaviour.[48] Hence, while principles are highly general and flexible instruments, rules are relatively specific and rigid.[49]

As a result, in order to assume an autonomous character and to

---

[44] Verschuuren (n40) at 52-53.

[45] Bryan A. Garner (ed) *Black's Law Dictionary*, 8 ed (2004) 3674; Gamer (n29) at 3886; EWRMP (n26) Introduction. Since principles have a strong influence on policies, it is not conceivable for a policy to be announced that is contrary to certain principles of environmental policy and law. Verschuuren ibid at 41; David Wilkinson *Environment and Law – Routledge Introduction to Environmental Series* (2002) 20; Gebretekle (n23) at 65.

[46] Verschuuren ibid.

[47] Colin Diver *'Regulatory Precision,' in Making Regulatory Policy* ed (1989) as cited in Cornelius M Kerwin 'Rule making: how government agencies write law and make policy' (1997) 3.

[48] Humberto Avila *Theory of Legal Principles* (2007) 133; Avila (n48) at 134.

[49] De Sadeleer (n4) at 305 and 307. Braithwaite and Drahos (n43) at 19; Joseph Raz 'Legal principles and the limits of law' (1971-1972) 81 *Yale. L J* 823 (http://heinonline.org) 22 08:35:57 2011, 838. While principles do not operate in an all-or-nothing fashion, rules apply in an 'all-or-nothing fashion' to determine a decision. Braithwaite and Drahos (n43) at 18; Dworkin, Ronald M, 'The Model of Rules' (1967). Faculty Scholarship Series. Paper 3609. http://digitalcommons.law.yale.edu/fss_papers/3609, 25 in tandem with Bell and McGillivray (n40) at 54.

be binding, a principle must appear in legally binding text and be formulated in a sufficiently specific and prescriptive way.[50]

Thus, polluter-pays serves as a principle, a rule and a policy, each with different respective functions and meanings aimed at reaching the ideal of sustainable development.[51]

2.1.2 Functions of the polluter-pays principle52

A. Redistributive function

The main functions of the polluter-pays principle are an internalisation of public authorities' social costs for pollution prevention and control[53] and the safeguarding of the public budget allocation for it.[54]

Consequently, polluters should reimburse the state's expenditures on the elimination, reduction and treatment of their emissions as well as internalise their negative externalities.[55] The redistributive function thus envisages the internalisation of the social costs borne by the public authorities for pollution prevention and control.

B. Preventive function

From the legal perspective, the polluter-pays principle, with the objective of ensuring a coherent environmental policy, should be consistent with the principle of prevention. From an economic

---

[50] De Sadeleer ibid at 311 and 339. See also Bosselmann (n41) at 44 and 45.

[51] See details in Verschuuren (n40).

[52] The polluter-pays principle has complementary and/or exclusive redistributive, preventive and curative functions. De Sadeleer (n4) at 34. A polluter is one who directly/indirectly damages the environment and pays for the costs of pollution prevention, control and restoration of damage that is not prevented. Dinah Shelton and Alexandre Kiss Judicial Handbook on Environmental Law (2005) 23 in tandem with Pitrone (n5) at 134.

[53] De Sadeleer ibid at 35.

[54] Pitrone (n5) at 136.

[55] S Shanthakumar *Introduction to Environmental Law*, 2 ed (2007) 383; Shelton and Kiss (n52) at 4; De Sadeleer (n4) at 35; Susan Wolf and Neil Stanley *Environmental Law* 5 ed (2011) 17; Alexandre Kiss and Dinah Shelton *Guide to International Environmental Law* (2007) 95; Nicholas A Ashford and Charles C Caldart *Environmental Law Policy, and Economics: Reclaiming the Environmental Agenda* (2008) 174; Duard Barnard *Environmental Law for All: A Practical Guide for the Business Community, the Planning Professions, Environmentalists and Lawyers* (1999) 104.

point of view, if the costs polluters must bear are greater than the benefits they anticipate from continuing their harmful behaviour, they are encouraged to reduce pollution to the optimal level.[56]

Put at the service of prevention, the polluter-pays principle means not allowing a polluter who pays to continue polluting with impunity. It thus aims at encouraging polluters to reduce their emissions/alter their behaviour rather than being content to pay charges.[57]

Thanks to this very strong link,[58] the polluter-pays and preventive principles are two complementary aspects of a single reality.[59]

C. Curative function

From a scientific angle, degradation relates more to introducing pollutants into the ecosystem than to crossing a threshold of irreversibility. So setting an emission threshold necessarily leads to degradation that compromises the regenerative capacity of water, soil and air.[60] As a corollary, the polluter-pays principle should give rise to liability for residual damage that occurs due to the inadequacy of established discharge thresholds.[61]

Thus, by stressing the curative dimension, the polluter-pays principle represents a further step of ensuring compensation for damage resulting from authorised activities.[62]

2.2 Technical justifications and instrumental roles of environmental tax in the realisation of the polluter-pays principle[63]

This section lays out a conceptual review of the technical justifications and distributive/incentive instrumental roles of environmental tax in the realisation of the polluter-pays principle.

---

[56] De Sadeleer (n4) at 36.

[57] D Pearce 'The polluter pays principle, briefing papers on key issues in environmental economics' Gatekeeper Series no LEEC 89-03 (2003) 2, available at http://www.mekonginfo.org/assets/midocs/0002714-economy-the-polluter-pays-principle.pdf, accessed on 8 June 2016.

[58] Bell and McGillivray (n40) at 244.

[59] De Sadeleer (n4) at 36.

[60] Ibid at 37.

[61] Ibid.

[62] Ibid.

[63] See generally Snape and De Souza (n3) at 109-122.

2.2.1 Introduction

A levy is a tax if it is compulsory, legally enforceable, levied by a public body and intended for a public purpose,[64] and it can be used to cover taxes, fees and charges.[65]

Correspondingly, economic instruments encompass all approaches[66] that use compulsory general[67]/benefit[68] taxes based on incentives/deterrents for achieving environmental objectives.[69]

A tax falls into the category of environmental if the *tax base* is a *physical unit* (or a *proxy for it*) of something that has a proven specific negative impact on the environment, when used or released.[70]

As a result, the name or stated purpose of a given fiscal instrument is not necessarily a universally applicable criterion of appraising the category of environmental tax.[71]

2.2.2 Technical justifications for environmental tax

Because there is no one best instrument that addresses all environmental problems, a government can use non-market and/or economic instruments depending on their efficiency.[72]

---

[64] Snape and De Souza ibid at 5; IBRD/WB (n6) at 33.

[65] IBRD/WB ibid.

[66] OECD Implementation Strategies for Environmental Taxes (1996) 9. Taxes that were introduced for non-environmental reasons but that impact environmental objectives are within the domain of environmental tax.

[67] 'A tax is general/unrequited in so far as paying it does not offer the taxpayer anything of similar value in return.' IBRD/WB (n6) at 33; See also Philippe Sands Q C, *International Environmental Law*, 2 ed (2003) 161; David Duff 'Benefit taxes and user fees in theory and practice' at 393, available at http://muse.jhu.edu/journals/tlj/summary/v054/54.4duff.html, accessed on 8 June 2016.

[68] See 'Benefit taxes and user fees' in Duff ibid; See also IBRD/WB ibid. Sands (n51) at 161.

[69] Bell and McGillivray (n40) at 239; OECD (n66) at 9; Environmental objectives can be achieved by taxing the inputs used to produce a product, or by taxing the product itself. IBRD/WB ibid at 36 and 37.

[70] OECD Evaluating Economic Instruments for Environmental Policies (1997) 18; European Commission Proposal for a Council Directive Restructuring the Community Framework for the Taxation of Energy Products (1997), COM (97)30 Final, Brussels; European Commission, Manual: Statistics on Environmental Taxes, Version 3.0 (1996) 3.

[71] IBRD/WB (n6) at 33.

[72] OECD Taxation, Innovation and the Environment (2011) 11 in tandem with Murty (n7) at 129.

A. Market failure vs. environmental tax

Market failures result from the failure of the market demand and supply schedules to reflect the full prices of externalities.[73] Pollution/depletion, where private benefits and costs diverge from social benefits and costs,[74] is one of the classic cases of negative externality.[75] And:

> A *negative externality* is a cost that one economic agent imposes on another but does not take into account when making production or consumption decisions. When the cost of pollution or resource use are not reflected in prices, market inefficiencies will result with *excessive production* or *consumption of products* and activities that impose *social costs*. Externalities exist because of the public goods nature of the environment.[76]

As a result, an unregulated market has room for unabated externalities[77] and grants *implicit subsidy* to polluters.[78] So, when a market fails to appreciate the opportunity costs of environmental use,[79] it causes overuse of the environment[80] and overproduction of ecologically harmful products.[81]

Meanwhile, environmental tax provides an ideal means of injecting appropriate price signals and creating markets for unpriced resources and environmental services.[82]

---

[73] H L *Bhatia Public Finance* 19 ed (1998) 5; Anil Markandya et al *Dictionary of Environmental Economics* (2002) 129.

[74] Alm and Banzhaf (n15) at 178; Markandya et al (n73) at 94; See details in A C Pigou *The Economics of Welfare* 4 ed (1932) 172-203.

[75] Markandya et al ibid at 5 and 94; Pigou ibid at 21; De Sadeleer (n4) at 21; Bell and McGillivray (n40) at 239.

[76] OECD (n2) at 19; Charles D Kolstad *Environmental Economics* (2010) 91.

[77] Alm and Banzhaf (n15) at 179; Richard B Stewart 'Economic incentives for environmental protection: Opportunities and obstacles' in Richard L Revesz et al (ed) *Environmental Law, the Economy, and Sustainable Development* (2008) 172; Pigou (n74) at 134; Ashford and Caldart (n55) at 132.

[78] Murty (n7) at 130; Snape and De Souza (n3) at 119.

[79] Siebert (n38) at17.

[80] Ibid at 18.

[81] Ibid.

[82] Jean-Philippe Barde 'Green tax reforms in OECD countries: An overview' (to be published in S Cnossen (ed) Taxes on Pleasure (2004) 2; Jean-Philippe Barde Economic Instruments in Environmental Policy: Lessons from

B. Command-and-control vs. environmental tax

In general, while command-and-control instruments limit the quantity of residuals that each actor may generate, economic instruments establish a price signal for each unit of residual generated.[83]

Some of the inefficacies[84] of the command-and-control instruments that have led to greater interest in using environmental tax[85] are its:

(1) Inefficacy of giving prices at each unit of pollution,[86] reduced incentives to develop and adopt means for achieving higher levels of limitations on residuals than required by law[87] and confinement to end-of-pipe treatment methods,[88]
(2) High cost of information, dysfunction of administration, impairment of innovation, structural distortions and diminishing environmental returns from increased regulatory stringency,[89]
(3) Failure to internalise residual damages that prevent aggregate pollution concentrations from exceeding damage thresholds,[90]
(4) Incompetence to ensure equalised marginal costs of pollution control among polluters generating the same pollution.[91]

As a result, when there is market failure, taxation and command-and-control instruments are the two supplementary/complementary policy mix instruments of the polluter-pays principle.[92]

---

the OECD Experience and their Relevance to Developing Economies (1994) at 10; Bell and McGillivray (n40) at 239; UNEP (n11) at 29; Murty (n7) at 128; Pigou (n74) at 172.

[83] Stewart (n77) at 174, 176 and 179; Kolstad (n76) at 151; Bell and McGillivray ibid at 18.240.

[84] OECD (n72) 12; OECD (n2) at 20. These inefficacies demonstrate the incompleteness of command-and-control instruments.

[85] Susan Wolf/ Anna White/ Neil Stanley *Principles of Environmental Law* 3 ed (2002) 18, 472.

[86] OECD Taxation, Innovation and the Environment (2010) 12; OECD (n2) at 20.

[87] Kolstad (n76) at 141; Stewart (n77) at 185.

[88] Stewart ibid at 182.

[89] Stewart ibid at 179 and 187; Kolstad (n76) at 141.

[90] Kolstad ibid at 142; Stewart ibid at 180.

[91] Kolstad ibid at 141.

[92] De Sadeleer (n4) at 21; IBRD/WB (n6) at 12, 17 and 20; Stewart (n77) at 174, 176 and 179; Kolstad ibid at 151; Bell and McGillivray (n40) at 240.

2.2.3 Instrumental roles of environmental tax[93]

This section is provided to display the conceptual threshold-bound distributive and incentive instrumental roles of environmental tax in the realisation of the polluter-pays principle.

A. Distributive roles of environmental tax

Environmental fiscal reform opens the door to a new tax base, supplementing other revenue-raising efforts.[94] The underlying rationale of payment for ecosystem services is that beneficiaries of ecosystem services should compensate the stewards that maintain its services.[95] As a result, when an environmental charge fulfils a redistributive function, the charge should be proportional to the pollution[96] and the environmental risk created by commercialisation.[97]

On the basis of the benefits received theory, the state provides various public goods and services to the society, and beneficiaries contribute in proportion to the benefits received.[98]

Thus the distributive role of environmental tax is maintaining the ecosystem service and internalizing the social costs to the public authorities for pollution prevention and control.[99]

---

[93] Environmental taxes, with their distributive and incentive roles, are probably the most emblematic instruments of the simultaneous intervention of the polluter-pays and prevention principles. De Sadeleer (n4) at 47; See also Snape and De Souza (n3) at 21-33; UNEP (n11) at 12. Sama Memuna Semie and Oliver Njuh Fuo 'Case study of municipal solid waste management in the Bamnda urban council area of Cameroon' (2010) 17 SALJ 43; Fasil Nahom *Constitution for A Nation of Nations: The Ethiopian Prospect* (1997) 200.

[94] IBRD/WB (n6) at 17.

[95] Erik Gomez-Baggethun and Manuel Ruiz-Perez 'Economic valuation and the commodification of ecosystem services' (2011) at 7, available at http://ppg.sagepub.com/content/35/5/613.refs.html, accessed on 8 June 2016. 'They are effectively a charge for the use of the public resource of environmental quality.' UNEP (n11) at 26.

[96] De Sadeleer (n4) at 46.

[97] De Sadeleer ibid at 47.

[98] Bhatia (n73) at 56; UNEP (n11) at 24.

[99] De Sadeleer (n4) at 35; IBRD/WB (n6) at 20.

B. Incentive roles of environmental tax

Fiscal measures can be used to modify behaviour through either the stick of taxing undesirable activities or the carrot of tax savings for desirable activities.[100]

An environmental tax is a fiscal instrument that sends environmentally friendly signals to consumers and industrialists,[101] and its incentive role[102] encompasses:

(1) Creating an incentive for polluters to limit environmentally harmful activities and to reduce their residual level and their excessive use of natural resources,[103]

(2) Shifting the production structure and consumption pattern into an environmentally friendly one through a pricing system that signals the true environmental costs of goods and services,[104]

(3) Encouraging the innovation of cleaner solutions and abatement technologies in response to the prices put on environmental damage.[105]

Thus, the wide range of environmental taxes encourages a more equal mix between cleaner production processes, innovation, end-of-pipe abatement measures, adoption of products that cause less pollution, development of less-polluting products and reduction of consumption.[106]

---

[100] Sanford E. Gaines and Richard A. Westin *Taxation for Environmental Protection: A Multinational Legal Study* (1991) 10; Nahom (n93) at 200; Pitrone (n5) at 127.

[101] Wolf, White and Stanley (n85) at 472; Sands et al (n13) at 126.

[102] Because it is aimed at guiding the behaviour of polluters, revenue generation is of secondary importance. Pitrone (n5) at 121.

[103] Sands (n51) at 161; Stewart (n77) at 175-6; UNEP (n11) at 23.

[104] Kosonen (n6) at 1; Bell and McGillivray (n40) at 239. A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa (Draft Policy Paper) National Treasury Tax policy Chief Directorate (2006) at I; De Sadeleer (n4) at 47; OECD (n2) at 20; IBRD/WB (n6) at 36.

[105] Kosonen ibid; OECD (n68) at 12. Pigouvian taxes have the dynamic property of creating an incentive for entrepreneurs to develop more efficient ways to reduce pollution. Alm and Banzhaf (n15) at 179; Kolstad (n76) at 151; OECD (n68) at 12. EIS generate investment flows or revenues that can be reinvested to reduce pollution by upgrading outdated production processes. Stewart (n77) at 175; UNEP (n11) at 23.

[106] OECD, Environmental Taxation, A Guide for Policy Makers (2011) at 4; OECD (n68) at 13.

3 UNDERSTANDING THE ENVIRONMENTAL REGULATORY CONTEXT IN ETHIOPIA

3.1 The scope of 'environment' in Ethiopia

The word environment is derived from a French word *environner* that means to encircle,[107] and it is a union of abiotic and biotic factors[108] of renewable/non-renewable natural resources.[109] Being that it is limited and vulnerable to deterioration,[110] and it is a public consumption good and a receptacle of waste,[111] it is a stock that critically determines the overall welfare.[112]

In Ethiopia, *environment* means:

> The *totality of all materials* whether in their natural state or modified or changed by humans, their external spaces and the interactions which affect their quality or quantity and the welfare of human or other living beings, including but not restricted to land, atmosphere, weather and climate, water, living things, sound, odour, taste, social factors, and aesthetics.[113]

Subject to bioethical dilemma, Ethiopia has the seeds of anthropocentric[114] and ecocentric[115] theories that ascribe instrumental and intrinsic value, respectively, to the environment.[116]

---

[107] Shelton and Kiss (n52) at 4.

[108] Alan Gilpin *Dictionary of Environmental Law* (2000) 92.

[109] Markandya et al (n73) at 79-80.

[110] OECD (n8) at 128.

[111] Siebert (n38) at 4.

[112] Murty (n7) at 136; Markandya et al (n73) at 79-80.

[113] FPCP (n19) Article 2(6); FEPOEP (n17) Article 2(3); Federal Environmental Impact Assessment Proclamation (FEIAP), no 299/2002, Article 2(2); Addis Ababa City Government Environmental Pollution Control Regulation (AAEPCR), no 25/2007, Addis Neg. Gaz., 4th Year, no 56, Article 2(3); Addis Ababa City Government Environmental Impact Assessment Regulation (AAEIAR), no 21/2006, Addis Neg. Gaz., 4th Year, no 48, Article 2(1). The definition of environment affects the scope of legal rules that are intended to protect the environment. Alexandre Kiss *Introduction to International Environmental Law* (1997) 3.

[114] FDREC (n16) Article 40(3), 43(1), 44(1).

[115] EPE (n21) 2.3 q; CBD (n8) Preamble, Article 1; EBDCRP (n8). However, both are designed with an anthropocentric tone.

[116] See details of 'Instrumental and intrinsic values' by Christopher D Stone in 'Should trees have standing: Toward legal rights for natural objects' (1972) 45 *California Law Review* 457.

Thus, in Ethiopia, the scope of environmental law[117]and liability is the mirror image of the sum total of the intrinsic and instrumental elements of the environment.

3.2 The right to ownership and use of natural resources in Ethiopia

Subject to the Charter of the United Nations and principles of international law, Ethiopia has the sovereign right to exploit its own resources, which are the foundation of its economy,[118] pursuant to its own environmental policies.[119]

At the same time, the right to ownership[120] of rural and urban land, as well as of all resources, is exclusively vested in the state and in the peoples of Ethiopia,[121] and:

> The government has the duty to hold, on behalf of the people, land and other natural resources and to deploy them for their common benefit and development.[122]

Thus, the utilisation of the natural resources of Ethiopia is subject to a permit and/or pricing system,[123] and their depletion/

---

[117] See 'Environmental law' in Gilpin (n108) at 106.

[118] EPE (n21) 1.1, 1; Ethiopia's Vision for a Climate Resilient Green Economy (EVCRGE) (2011) 16.

[119] UN Stockholm Declaration on the Human Environment (1972) Principle 21, available at www.un-documents.net/aconf48-14r1.pdf, accessed on 8 June 2016.

[120] Given public property rights to the environment, environmental regulation by the public could set a price for waste disposal service. Murty (n7) at 130; See also Markandya et al (n73) at 154.

[121] FDREC (n16) Article 40(3); EWRMP (n26) 1.3 (1); Ethiopian Water Sector Strategy (EWSS) (2001) 3; Ethiopian Federal Water Resources Management Proclamation (EFWRMP), no 197/2000, Neg. Gaz., 6th Year, no 25, Article 5; Federal Urban Lands Lease Holding Proclamation (FULLHP), no 721/2011, Neg. Gaz., 14th Year, no 29, Preamble; Ethiopian Mining Proclamation (EMP), no 52/1993, Neg. Gaz., 23rd Year, no 42, Preamble; Access to Genetic Resources and Community Knowledge, and Community Rights Proclamation (AGRCKCRP), no 482/2006, Neg. Gaz., 13th Year, no 13, Article 5.

[122] FDREC (n16) Article 89(5); EMP ibid Preamble; AGRCKCRP ibid Article 3.

[123] FDREC ibid Article 40(6), 97(2)(8)(10), 98(3); AACGRCP (n19) Article 52(2)(12)(13); National Conservation Strategy Volume II (NCS II) (1996) no 99, 101(a); EWRMP (n26) 2(2.2)(2.2.5)(B); EFWRMP (n121) Article 11-22;

degradation can be recorded in its accounts as depreciation of capital.[124]

3.3 The idea of sustainable development and environmental protection in Ethiopia

Ethiopia has national[125] and international[126] commitments to the

Ethiopian Water Resources Management Regulation (EWRMR), no 115/2005, Neg. Gaz., 11th Year, no 27, Article (3-6) and (30-34); Forest Development, Conservation and Utilization Proclamation (FDCUP), no 542/2007, Neg. Gaz., 13th Year, no 56, Article 18(7); Institute of Biodiversity Conservation and Research Establishment Proclamation (IBCREP), no 120/1998, Neg. Gaz., 4th Year, no 49, Preamble and Article 5; AGRCKCRP ibid at Article 19(1) (4); FULLHP(n121) Article 4(1); EMP (n121) Article 37, 38, 39 and 40; Mining Operations Council of Ministers Regulations (MOCMR), no 182/1994, Neg. Gaz., 20th Year, no 84, Article 32, 33 and 34; Mining Income Tax Proclamation (MITP), no 53/1993, Neg. Gaz., 23rd Year, no 43, Article 3; Urban Land Lease Holding Regulation of Addis Ababa City Government (AAULLHR), Regulation no 29/2010, Addis Neg. Gaz., 2nd Year, no 29; Prevention of Industrial Pollution Council of Ministers Regulation (PIPCMR), no 159/2008, Neg. Gaz., 15th Year, no 14, Article 5; AAEPCR (n113) Article 14(2-5). The permit and/or price system utilization of natural resources is considered in detail under sections 6 and 7.

[124] NCS II (n123) no 3.6.1, 118(d); See also EPE (n21) 1.1.

[125] FDREC (n16) Article 43(1) (3); EPE (n21) 2.1, 2.3 (c), (d), (k); NCS II ibid no 1.1; EWRMP (n26) 1(1.1), 1.2(1) and (5), 1.3, 2.2.2 (c)(1), 2.3.1.2 (4); EWSS (n121) 1, 17; The National Energy Policy of Ethiopia (NEPE) (1993), no 3.6, 4.6, 5.6; EMDGR (n20) vii; FEPOEP (n17) Preamble, Article 5; FEIAP (n113) Preamble; FPCP (n18) Preamble; Federal Standards for Industrial Pollution Control in Ethiopia (FSIPCE) (2011) at 1; Urban Planning Proclamation (UPP), no 574/2008, Neg. Gaz., 14th Year, no 29, Preamble, Article 5(10); AGRCKCRP (n121) Preamble, Articles 3 and 13; Fisheries Development and Utilization Proclamation (FDUP), no 315/2003, Neg. Gaz., 9th Year, no 32, Preamble; Code of Practice of the Floriculture Sector Council of Ministers Regulation (CPFSCMR), no 207/2011, Neg. Gaz., 17th Year, no 74, Preamble, Article 3; Public Health Proclamation (PHP), no 200/2000, Neg. Gaz., 8th Year, no 33, Preamble; Growth and Transformation Plan of Ethiopia Volume I: Main Text (GTPE I) (2010/11-2014/15); Federal Environmental Protection Authority of Ethiopia Business Process Reengineering (FEPAE BPR) (2010) no 1.2.1 Vision; Federal Environmental Protection Authority of Ethiopia Balanced Scorecard (FEPAE BSC) (2012-2016) no 1.7.

[126] FDREC ibid Article 4(9) see also 43(3); Stockholm Declaration (n103); Rio Declaration (n8) Principle 3 and 4; Agenda 21 (n8); Framework Convention on Climate Change (n8); Convention on Biological Diversity (n8); AU 'African Convention on the conservation of nature and natural resources' (1968) Article 2(2) and 3(3), available at *faolex.fao.org/docs/pdf/mul45449.pdf*, accessed on 8 June 2016.

idea of sustainable development.[127] Therefore, parallel to the government's endeavour for a green economy:[128]

> *Protection* means sustaining of the essential characteristics of nature and enhancing the capacity of the natural resource base with a view to safeguarding the interest of the present generations without compromising the opportunity for the future.[129]

At the same time, the sustainable protection of intrinsic and instrumental elements of the environment is reiterated in the Environmental Policy,[130] Biological Diversity Convention Ratification[131] and Biosafety[132] Proclamations of Ethiopia.

Thus, Ethiopia has given recognition to the idea of sustainable development, which is the source of the high moral value of the polluter-pays principle,[133] and to environmental protection based on ecocentric and anthropocentric tones.

---

[127] See 'Sustainable development' in WCED (n12) at 43. Sustainable development is an ideal and not a principle. Verschuuren (n40) at 16.

[128] ECRGES (31) 1; EVCRGE (n102) at 5. 'Ethiopia will pursue to attain the triple goals of economic growth, net-zero emission, and climate resilience.' ECRGEFOM (17) 1.

[129] FEPOEP (n17) Article 2(6); AAEPCR (n113) Preamble and Article 4(1). 'Environmental protection is one of the priorities of the Ethiopian government.' The House of Federation of the Federal Democratic Republic of Ethiopia' The Federal Budget Grant Distribution Formula (HFFDRE: FBGDF) (2012/13–2016/17) 114. One of the objectives of the Office of the Federal Auditor General is undertaking environmental protection audits. Office of the Federal Auditor General Establishment Proclamation (OFAGEP), no 669/2010, Neg. Gaz., 16th Year, no 22, Article 4(3). When working out a compromise, Ethiopia is committed to err on the side of caution for the environment. EPE (n21) 2.3 (f); FEIAP (n113) Article 4(2); AAEIAR (n113) Article 6(3); UPP (n125) Preamble, Article 29(2); See also GTPE I (n125) at 8.9.1; Verschuuren (n40) at 50; Bachaus (n1) at 1112; FSIPCE (n125) at 1; Jonathan Verschuuren 'Climate change adaptation and environmental pollution control law' in Jonathan Verschuuren (ed) *Research Hand Book on Climate Change Adaptation Law* (2013) 383.

[130] EPE ibid 2.3 q.

[131] CBD (n8) Preamble, Article 1; EBDCRP (n8).

[132] Biosafety Proclamation (BSP), no 655/2009, Neg. Gaz., 15th Year, no 63, Preamble, Article 4.

[133] Verschuuren (n40) at 52; See also FSIPCE (n125) at 1 in tandem with OECD (n3) at 177.

3.4 The framework of environmental standards, degradation and pollution in Ethiopia

The section is designed to sketch the functional interplay of environmental standards, release, pollutants, degradation, pollution and impact under the federal jurisdiction of Ethiopia.

3.4.1 Environmental standards

Having the *net zero-emission* aspiration in 2025 and cognizance of *emission*, *process* and *product* standards,[134] in Ethiopia:

> *Standard* means a document, developed by a recognised body on the basis of consensus that provides, for common and repeated use, rules, guidelines or characteristics for *products* and their related *process* or *production methods* and includes *packaging* and *labelling* requirements.[135]

In line with that, in Ethiopia the sectors that require standards[136] must have standards for, at a minimum, effluents, air, soil, noise and waste.[137]

Furthermore, the federal environmental standards,[138] subject to scientific and environmental principles and public interest-based waiver,[139] set the minimum thresholds,[140] and the states

---

[134] PIPCMR (n123) Article 4(1) and (2); ECRGEFOM (n17) at 1, 11, 15, 19, 26 and 128. 'The overall environmental quality determines the level of resilience of the environment to change.' Verschuuren (n129) 384.

[135] Ethiopian Standards Agency Establishment Council of Ministers Regulation (ESAECMR), no 193/2010, Neg. Gaz., 17th Year, no 13, Article 2(3). 'Standard means the measurement of environmental quality or environmental pollution.' AAEPCR (n113) Article 2(9). See 'Quality' in Pesticides Registration and Control Proclamation (PRCP), no 674/2010, Neg. Gaz., 16th Year, no 52, Article 2(23); See the definition of water quality and water quality standards in EFWRMP (n121) Article 2(13) and (14).

[136] See 'Standards' in Shelton and Kiss (n52) at 34; Bell and McGillivray (n40) at 228-235; Gilpin (n108) at 289; Markandya et al (n73) at 168-169. Conversely, the inadequacies of the discharge thresholds necessarily lead to authorised degradation of water, soil, and air that are a cause of action for a residual damage. De Sadeleer (n4) at 37 and 82-83.

[137] FPCP (n18) Article 6(1); AAEPCR (n113) Article 5-7.

[138] FPCP (n18) Article 6(5).

[139] Ibid Article 6(1) and 6(5).

[140] Ibid Article 6(4); FEPOEP (n17) Article 15(2); PIPCMR (n123) Article 4(1); FSIPCE (n125) at 1; See also Marlene Botes 'Should VAT not support the environment? International VAT Monitor (2012) 98.

may adopt more stringent environmental standards than the federal ones.[141]

Accordingly, the federal government approved the Standards for Industrial Pollution Control,[142] and it was subsequently adopted by the Addis Ababa Administration.[143] Subject to these standards and the net *zero-emission* aspiration, any factory:

> …shall *prevent* or, if that is not possible, shall *minimize the generation of every pollutant to an amount not exceeding the limit* set by the relevant environmental standard and dispose of it in an environmentally sound manner.[144]

This helps to ensure that in Ethiopia, there is no legal room for a race to the bottom by adopting less stringent standards than the minimum, and paying and continuing to pollute ad infinitum with impunity.[145]

Zero emission is thus the centre of gravity, and the spectrum of environmental tax is bound to the domain of degradation between zero emission and the maximum threshold.[146]

---

[141] FPCP ibid Article 6(4); FEPOEP ibid Article 15(2); AAEPCR (n113) Article 5(2).

[142] FSIPCE (n125).

[143] Where there are no federal standards, Addis Ababa adheres to environmental standards of international organizations. AAEPCR (n113) Article 5(2).

[144] PIPCMR (n123) Article 4(1).

[145] FPCP (n18) Article 3(1); AAEPCR (n113) Article 8.

[146] See details in section 7.

3.4.2 Pollutant, impact and pollution

Concomitant to the Basel,[147] Bamako[148] and Rotterdam[149] Conventions, in Ethiopia pollutant means *any* substance whether *liquid*, *solid*, or *gas* that is intentionally/unintentionally *released*[150] and *directly/indirectly*:[151]

(1) alters the quality of any part of the receiving environment so as to affect its beneficial use adversely; or
(2) produces toxic substances, diseases, objectionable odour, radioactivity, noise, vibration, heat, or any other phenomenon that is hazardous or potentially hazardous to human health or to other living things;

Pollution means *any* condition which is *hazardous or potentially hazardous* to human health, safety, or to living things created by altering any physical, radioactive, thermal, chemical, biological or other property of any part of the environment in *contravention*

---

[147] UN, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal Adopted by the Conference of the Plenipotentiaries on 22 March 1989, Entry into Force 5 May 1992, available at www.env.go.jp/en//recycle/basel_conv/files/conv_e.pdf, accessed on 8 June 2016; Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal Ratification Proclamation, no 192/2000, Neg. Gaz., 6th Year, no 20; The Basel Convention Amendment Ratification Proclamation, no 356/2003, Neg. Gaz., 9th Year, no 77.

[148] OAU, Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (1991), available at www.jus.uio.no/lm/hazardous.waste.ban...bamako.convention.../portrait.pd..., accessed on 26 March 2015; The Bamako Convention Ratification Proclamation, no 355/2003, Neg. Gaz., 9th Year, no 77; The Bamako Convention is more broadly defined than the Basel Convention, also encompassing household wastes, sewage and sludge, residuals arising from the incineration of household wastes and radioactive wastes.

[149] UNEP Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, (Revised in 2005), available at *www.fao.org/docrep/011/y5877e/y5877e00.htm*, accessed on 8 June 2016; Rotterdam Convention Ratification Proclamation, no 278/2002, Neg. Gaz., 8th Year, no 25; PRCP (135).

[150] 'Release means placing any pollutant in the environment in any way be it intentionally or otherwise.' FPCP (n18) Article 2(15); AAEPCR (n113) Article 2(14).

[151] FPCP ibid Article 2(11); AAEPCR ibid Article 2(12).

of any condition, limitation or restriction made under this proclamation or under any other relevant law.[152]

Impact means any change to the environment or to its component that may affect human health or safety, flora, fauna, soil, air, water, climate, natural or cultural heritage, other physical structure, or in general, subsequently alter environmental, social, economic or cultural conditions.[153]

Thus in Ethiopia, degradation and pollution are respectively the authorised and unlawful impacts of the releases that are absorbed by different environmental media and changed into pollutants through diffusion or transformation.[154]

To sum up, section six implies that the distributive and/or incentive instrumental roles of environmental tax are release-based and threshold-bound.

4 THE PARADIGM OF THE POLLUTER-PAYS PRINCIPLE IN THE FEDERAL JURISDICTION OF ETHIOPIA

This section serves to verify the basic tenets of polluter-pays as a principle, policy and rule and its redistributive, preventive and curative functions in the federal jurisdiction of Ethiopia.

4.1 Constitution

In Ethiopia the right to live in a clean and healthy environment is a fundamental human right,[155] and all federal and state

---

[152] FPCP ibid Article 2(12); AAEPCR ibid Article 2(4) (11). De Sadeleer (n4) at 40. Pollution, whether it is lawful or unlawful, is a function of an emission's impact on the environment. 'This definition of pollution should be accepted for reasons of fairness, appropriateness, and legal coherence.'

[153] FEIAP (n113) Article 2(4); AAEIAR (n113) Article 2(2). Environmental impact triggers a need for compensation to the extent that it generates damage. De Sadeleer ibid at 52; Shelton and Kiss (n52) at 55; See also EPE (n21) 2.3. (f)(g); NCS II (n123) no 79 (g), 118(d), 120; FPCP (n18) Article 3(3); FSIPCE (n125) at 1.

[154] While one must always refer to pollutants when defining the target variable 'environmental quality', economic policy must be directed against the release. Siebert (n38) at11; See details in section 7.

[155] FDREC (n16) Article 44(1); OAU 'African (Banjul) charter on human and people's rights (entered into force 21 October 1986), Article 24, available at www.achpr.org/files/instruments/achpr/banjul_charter.pdf, accessed on 8 June 2016. See 'Health' in PHP (n125) Article 2(5).

organs have the responsibility and duty to respect and enforce it.[156]

Moreover, any organ of the government of Ethiopia has the duty in the implementation of the constitution, laws and policies, to be guided by the following National Environmental Policy, Principles and Objectives of the Constitution:[157]

- Government shall endeavour to ensure that all Ethiopians live in a clean and healthy environment;[158]
- The design and implementation of development shall not damage the environment;[159]
- Government and citizens shall have the duty to protect the environment.[160]

These positive and negative obligations of the environmental objectives are the cornerstone of the distributive, preventive and curative functions of the polluter-pays principle.

According to Gebretekle, the FDRE constitution embraces the polluter-pays principle implicitly through recognizing the right to a clean and healthy environment and explicitly by obliging the state and individuals to protect the environment.[161]

Thus the redistributive, preventive and curative functions of the polluter-pays principle are part of the constitutional principles that guide all organs of the government in the implementation of the constitution, other laws and public policies.

4.2 Environmental and tax policies and strategies

Policies are essentially options selected for use as instruments to achieve intended goals and objectives across a wider scope,[162] and strategies are tools for translating the policy into action.[163] Furthermore, the policy rationale behind the law

---

[156] FDREC (n16) Article 13(1).
[157] Ibid Article 85(1).
[158] Ibid Article 92(1).
[159] Ibid Article 92(2).
[160] Ibid Article 92 (4); FPCP (n18) Preamble.
[161] Gebretekle (n23) at 89.
[162] EWRMP (n26) Introduction.
[163] Ibid.

reveals the true intention of the legislator in the formulation of the law.[164]

The Growth and Transformation Plan of Ethiopia calls for a green economy that formulates and implements environmental policies, strategies, laws and standards.[165] Alongside this, the Environmental Policy and Strategies of Ethiopia require the incorporation of the full environmental costs and benefits of natural resources by way of a comprehensive valuation of the environment and the services it provides.[166]

Moreover, the Environmental Policy, with the objective of ensuring consistency, demands that sectoral and cross-sectoral policies be checked against its principles.[167] As a result, the federal and Addis Ababa Administration sectoral policies, strategies and plans of Ethiopia aspire to make the polluter-pays principle mainstream.[168] Simultaneously, each organ of the Addis Ababa Administration, consistent with the federal policies, has the mandate to initiate their own respective policies.[169]

In this way, the redistributive, preventive and curative functions of the polluter-pays principle are part of the environmental and tax policies and strategies of the federal jurisdiction of Ethiopia.

---

[164] Tesfaye Abate *Introduction to Law and the Ethiopian Legal System* (unpublished teaching material, Justice and Legal System Research Institute of Ethiopia, 2009) 157.

[165] GTPE I (n125) at 8.9.1, 119.

[166] EPE (n21) 2.2 (d), 4.6, (a), 2.3 (g); Natural Resources Development and Environmental Protection Strategy and Major Programmes (NRDEPSMP) (1994), no 4.2, 4.2.1, 20; NCS II (n123) no 2.4(79) (g); see also FEPAE BSC (n125) no 6.1, no 2, 3, 7 and 8.

[167] EPE ibid 2.3.

[168] EPE ibid 3.8 (b); NCS II (n123) no 217, (d), 124(i), 3.6.2(124) (j), 5.3, 241(h). The Conservation Strategy of Ethiopia Volume III: Institutional Framework and Operational Arrangements (CSE III) (1997), 2.3(17)(h); EWRMP (n26) 3(3.3.1.4) (E)(2), 2(2.2)(2.2.5)(B)(1); AASWMASWP (n25) 2.5, 2.9 and 2.10; Revenue and Customs Authority of Ethiopia, Balanced Scorecard (RCAE BSC) (2011-2015); Ministry of Water, Energy and Irrigation of Ethiopia Balanced Scorecard (MWEIE BSC) (2011-2015) 1.3.2 and 1.4; Ministry of Finance and Economic Development of Ethiopia Balanced Scorecard (MFEDE BSC) (2011-2015).

[169] AAEMSORP (n34) Article 9(1).

4.3 Environmental and tax laws

Ethiopia has a duty to develop a national environmental liability and compensation regime,[170] the application of which gives the polluter-pays principle a clearer meaning than it has on its own.[171]

Furthermore, institutionally the Ministry of Environment and Forest of Ethiopia has the mandate to implement the *environmental objectives* of the *constitution* and the *basic principles* set out in the *Environmental Policy of Ethiopia*.[172]

As a result, in its federal jurisdiction there are federal laws that shall be published in the Federal *Negarit Gazeta,*[173] and all persons shall take judicial notice of them.[174] Simultaneously, there are Addis Ababa Administration laws that shall be published in the *Addis Negarit Gazeta,* and all persons shall take *judicial notice of them*.[175]

Moreover, Ethiopia has a strict environmental liability regime that is immune from authorisation-based exoneration of proponents.[176]

Parallel to the strict liability regime, in Ethiopia any person who causes any pollution is required to *clean up/pay the cost of cleaning* up, *restore* and, when restoration is not possible, to *pay appropriate compensation*[177] equal to the damage caused by

---

[170] Rio Declaration (n8) Principle13; FDREC (n16) Article 9(4).

[171] Verschuuren (n40) at 53.

[172] DPDEOFDREA (n17) Article 4(33) (1) (a); DPDEOFDRE (n17); FEPOEP (n17) Article 6(1).

[173] Federal Negarit Gazeta Establishment Proclamation (FNGEP), No. 3/1995, Neg. Gaz., 1st Year, no 3, Article 2(1) and 2(2); The House of Peoples' Representatives of Ethiopia Rules of Procedures and Members Code of Conduct Regulation (HPRERPMCCR), no 3/2006 Neg. Gaz., 5th Year, no 3, Article 58.

[174] FNGEP ibid Article 2(3).

[175] Nahom (n93) at 86; AACGRCP (n19) Article 61(7). The policies and laws of the Addis Ababa Administration have to be consistent with the federal policies and laws. AAEMSORP (n34) Article 9(1).

[176] Civil Code of the Empire of Ethiopia Proclamation (CCEEP), no 165/1960, Neg. Gaz., 19th Year, no 2, Article 2069(1) and (2); FEIAP (n113) Article 3(4); SWMP (n19) Article 16(1); AAEIAR (n113) Article 5(4). Following the lapse of the 5-year grace period in 2014, existing factories are subject to strict environmental liability. PIPCMR (n123) Article 12(1).

[177] FPCP (n18) Article 3(4) and 17; AAEPCR (n113) Article 14(4) and 22; AAEPCR (n113) Article 4(4) and 22; SWMP (n19) Article 16.

the act.[178] Equally, a person who commits an offence is liable on conviction.[179]

Moreover, having the duty to *install sound technology* that avoids/reduces environmental damage, there is a green light on *incentives* for the introduction of methods and importation of new equipment that enables the prevention/minimisation of pollution.[180]

Correspondingly, when we embark on the tax system, the emerging bases of excise tax on hazardous goods,[181] sanitary fees/taxes,[182] effluent charges[183] and a cap-and-trade system[184] vary according to the polluter-pays principle.

Thus, all persons in the federal jurisdiction of Ethiopia are bound to take judicial notice of the legally recognised distributive, preventive and curative functions of the polluter-pays principle.

To sum up, section seven has established the recognition of polluter-pays as a principle, rule and policy, with their respective different functions and meanings, as well as its degradation/pollution-based redistributive, preventive and curative functions.

---

[178] CCEEP (n176) Article 2091.

[179] See details in FPCP (n18) Article 12–17; The Criminal Code of the Federal Democratic Republic of Ethiopia Proclamation (CCFDREP), no 414/2004, Neg. Gaz., 9 May, 2005, Article 517,519, 520 and 521; The Ababa City Government Code Enforcement Service Regulation (AACESR), no 54/2012, Addis Neg. Gaz., 5rd Year, no 54, Article 17 and Schedule 1-4; AAEPCR (n113) Article 23 and 26; SWMP (n19) Article 17; AAWMCDR (n19) Article 30 and Penalty Schedule.

[180] FPCP (n18) Article 3(3) and 10; AAEIAR (n113) Article 24; Addis Ababa Water and Sewerage Authority Proclamation (AAWSA) no 298/1972, Addis Neg. Gaz., 31st Year, no 12, Article 7; AAEPCR (n113) Article 4(5) and 28; AAWMCDR (n19) Article 29; ERCAEP (n37) Article 6(2); AARAR (n22) Article 9(6).

[181] FPCP (n18) Preamble.

[182] AAWMCDR (n19) Article 25(1) and (2).

[183] EFWRMP (n121) Article 22(1).

[184] AAEPCR (n113) Article 14(4).

5 INSTRUMENTAL ROLES OF THE INTRODUCTION OF ENVIRONMENTAL TAX IN THE REALISATION OF THE POLLUTER-PAYS PRINCIPLE UNDER THE FEDERAL JURISDICTION OF ETHIOPIA

This section is apportioned to consider the constitutional, policy and legal bases for the introduction of environmental tax in the realisation of the polluter-pays principle under the federal jurisdiction of Ethiopia.

5.1 Constitutional basis for environmental tax

The scope of tax in the federal constitution and the charter of the Addis Ababa Administration is broadly designed and covers all compulsory requited and unrequited payments.[185]

It is also stipulated that the federal and state governments shall share revenue taking the federal arrangement into account,[186] and they shall bear their respective financial expenditures.[187]

At the same time, parallel to the environmental protection duty of the government and citizens,[188] which is the basis for environmental tax,[189] the government has a duty to allocate resources for the provision of public social services.[190]

Equally, the Constitutional Directives of Taxation of Ethiopia requires the *rate and amount of taxes to commensurate with services the taxes help deliver*.[191] This implies the recognition of benefit tax,[192] which is a baseline for some typologies of environmental levies.[193]

---

[185] FDREC (n16) Article 96, 97 and 98; AACGRCP (n19) Article 52, 53 and 61.

[186] FDREC ibid Article 95.

[187] Ibid Article 94(1). Environmental protection is one of the major expenditure items, and 'public expenditure on environmental protection is about 3% of the gross value of production from large and medium scale enterprises'. HFFDRE: FBGDF (n129) at 70 and 118.

[188] FDREC ibid Article 92(1) and (4).

[189] Pitrone (n5) at 137.

[190] FDREC (n16) Article 41(4); AACGRCP (n19) Article 2(4), 7(2), 9(1) and 24(2) (f).

[191] FDREC ibid Article 100(2).

[192] See details in Pitrone (n5) at 142; Duff (n52) at 392.

[193] Pitrone (n5) at 143.

As a result, the federal government[194] and the Addis Ababa Administration[195] are given the mandate to determine and collect the redistributive-based fees and charges related to licenses issued and services rendered by their organs.

Similarly, they have their respective mandate in the collection of custom duties and charges, value-added tax, excise taxes, fees for land usufructuary rights, royalties and land rentals on mining operations and royalties for the use of forest resources.[196]

There is, therefore, a constitutional basis for the distributive and incentive roles of environmental tax under the federal jurisdiction of Ethiopia.

5.2 Policy and strategy basis for environmental tax

Ethiopia currently follows a free market economic system[197] with a Democratic Developmental State orientation.[198] Accordingly, it has an ideal paradigm for the enabling, interventionist and regulatory roles of the government.[199]

In Ethiopia, markets for natural resources and environmental goods and services are either poorly designed or not yet developed. So in reality, they are subject to incorrect prices or no prices at all.[200] Consequently, the government has a rationale to intervene and rectify this problem through policy instruments such as

---

[194] FDREC (n16) Article 96(7).

[195] FDREC ibid Article 97(9); AACGRCP (n19) Article 52(14) and (15).

[196] FDREC ibid Article 96, 97 and 98. By introducing environmentally friendly principles into these types of taxes, governments can influence environmental attitude and behaviour at the ground level.

[197] Trade and Practice Proclamation (TPP), no 329/2003, Neg. Gaz., 9th Year, no 49, Preamble, Article 3; GTPE I (n125) at 64.

[198] Mehret Ayenew 'The growth and transformation plan: Opportunities, challenges and lessons' in Dessalegn Rahmato Meheret Ayenew and Asnake Kefale et al (ed) *Reflection on Development in Ethiopia New Trends, Sustainability and Challenges* (2014) 7; FEPAE BSC (n125) at 3.

[199] EMDGR (n20) at iii; Ayenew ibid at 6; IDSE (n197) at 6; Ethiopia Peoples' Revolutionary Democratic Front (EPRDF) Policy Manual (2011); MIPAVD (n18); NCS II (n123) no 1.5, no 39, 40(a). Ethiopia has common but differentiated environmental responsibilities. Rio Declaration (n8) Principle 7.

[200] NCS II (n123) no 3.6.2, no 122.

taxes, incentives, charges, regulations and the provision of public goods.[201]

Concurrently, the Environmental Policy calls upon the law to provide a broad framework for both punitive and incentive measures;[202] and, where possible, the *tax structure* should be designed in such a way that it provides *positive incentives* for environmentally desirable activities and *negative incentives* for actions that damage the environment.[203]

There is, therefore, a policy and strategy basis for the complementary/exclusive distributive and incentive roles of environmental tax under the federal jurisdiction of Ethiopia.

5.3 Legal seeds for environmental tax

Subject to the *principle of tax legality, harmonisation* and *standardisation,*[204] this section lays out the distributive/incentive legal seeds for environmental tax in the federal jurisdiction of Ethiopia.

5.3.1 Solid waste tax

In Ethiopia, solid waste management means 'the collection, transportation, storage, recycling or disposal of solid waste, or the subsequent use of a disposal site that is no longer operational.'[205]

---

[201] NCS II ibid no 1.5, 40(c), 41and 122 and 3.6.2(123); NRDEPSMP (n166) no 4.2, 4.2.1, 20-21; See details in The Conservation Strategy of Ethiopian Volume IV, Action Plan for the Federal Policy on Natural Resources and the Environment (CSE IV) (1996), no 2(b); EPE (n21) 2.3 (h), 4.6 (f); NCS II (n123) no 3.6.2(125)(d); FEPAE BSC (n125) no 6.1, no 2.

[202] EPE ibid 5.2 (f); FEPAE BSC ibid no 6.1, no 1, 3, 4 and 8.

[203] NCS II (n123) no 3.6.2(124) (g) (k); See also EWRMP (n26) 1(1.3) (3), 2(2.2.5) (B) (1) and (2); EWSS (n121) 5; FEPA BSC (n125) No. 2.1, 17; See also RCAE BSC (n168) at 10; MFEDE BSC (n168) at 13, 33 and 39.

[204] FGEFAP (n34) Article 10(1); A Proclamation to Provide for Financial Administration of Addis Ababa City Government (AAFAP), no 16/2009, Addis Neg. Gaz., 2nd Year, no 1, Article 10(1). 'Tax systems at the federal and regional levels shall have harmonized and standardized tax bases.' FGEFAP (n34) Article 64(1). At a minimum, the principle of tax legality means that the taxation must have a legal basis. Frans Vanistendael 'Legal framework for taxation' in Victor Thuronyi (ed) *Tax Law Design and Drafting*, International Monetary Fund, vol 1 (1996) 16.

[205] SWMP ibid Article 2(7).

It is therefore critical in protecting urban environments, public health and the image of cities.[206]

To this effect, the Cleansing Management Agency[207] and the Solid Waste Recycling and Disposal Project Office[208] of the Addis Ababa Administration were established with the objective of ensuring integrated solid waste management and disposal sites.[209]

Also, all persons have the duty to pay a sanitation fee for sanitary services and any organisation with a huge environmental impact is bound to pay a tax/special service fee.[210] As a result, the administration assesses the following categories of sanitation fees/taxes for municipal and treated hazardous solid waste:

(1) *Water Customers*: Sanitary service tariffs shall be collected on the basis of the water consumption category,[211] and the payment for landfill[212] services shall be collected at a tariff rate that is determined by the Addis Ababa Recycling and Disposal Project Office.[213]

---

[206] Bjerkli (n24) at1273. Solid waste means 'anything that is neither liquid nor gas and is discarded as unwanted'. SWMP (n19) Article 2(6); AAWMCDR (n19) Article 2(3); See also AACESR (n178) Article 2(11).

[207] Ibid Article 4(1); AAEMSORP (n34) Article 55.

[208] AAEMSORP ibid Article 58.

[209] FPCP (n18) Article 5(1); SWMP (n19) Article 4(1) and 14(1); AAEMSORP ibid Article 55(1); Addis Ababa Sanitation Administration Agency *Sanitation Service Delivery Standard* (AASAASSDS) (2013/14).

[210] AAWMCDR (n19) Article 25(1) (2); AAEMSORP ibid Article 53(6), 55(10) and 58(7); AASWMASWP (n25) no 1.2.3, 2.9, 7.1, 7.2, 7.3 and 9.6; To Determine and Collect the Sanitary Service Tariff of the Addis Ababa City Government Regulation (AADCSSTR), no 24/2009, Addis Neg. Gaz., Article 5.

[211] AADCSSTR ibid Article 5(1) (e) and Annex 1; Addis Ababa Water Supply and Sewerage Disposal Service Regulations No.31/2003 Amendment Regulation (AAWSSDSAR), no 35/2011, Addis Neg. Gaz., 3rd Year, no 35, Schedule 1.

[212] Landfill means 'a place where solid waste, collected and presumed useless is stored, buried, discarded, burnt and disposed, on or under the ground, in a manner not harmful to health'. AAWMCDR (n19) Article 2(12); See also AASWMASWP (n25) no 3.2.2; 4.3.1.

[213] AAEMSORP (n34) Article 58(7); AADCSSTR (n210) Article 5(3) (b). 'States shall determine and collect fees for land usufructuary rights.' FDREC (n16). The federal and Addis Ababa landfill lease modality could be integrated with landfill charge. FULLHP (n121) Article 4(1); AAULLHR (n123).

(2) *Registered Trade Licenses*: The payment of the sanitary service tariff by registered traders shall be carried out according to the pre-existing tariff rate set by the Bureau of Finance and Economic Development of the Addis Ababa Administration.[214]

(3) *Miscellaneous*: The collection of the sanitary tariff from chat and other related solid wastes that burden the sanitary service of the city shall continue at the existing tariff rate until it is studied and determined.[215] Moreover, a value-added tax and excise tax on chat are collected with the objective of reducing the domestic consumption of chat, which is growing at higher rate.[216]

These are, therefore, some of the legal seeds for the distributive and incentive roles of solid waste charges in the realisation of the polluter-pays principle under the federal jurisdiction of Ethiopia.

5.3.2 Effluent tax

In Ethiopia *water* resource means surface/ground water,[217] and w*ater resource management* encompasses water resource development, utilisation, conservation, protection and control.[218] Simultaneously, *effluent* means any treated/untreated harmful matter released into water in solid, liquid or gaseous form;[219] and *water pollution* means harm caused to water due to organic/inorganic effluent or as a result of a change in its temperature.[220]

---

[214] AADCSSTR (n210) Article 5(2); Trade License and Sanitary Service Charge Directive of the Bureau of Finance and Economic Development of the Addis Ababa Administration; Commercial Registration and Business Licensing Proclamation (CRBLP), no 686/2010, Neg. Gaz., 16th Year, no 42, Article 36(8)(a).

[215] Ibid Article 5(3) (a).

[216] Value Added Tax Proclamation (VATP), no 285/2002, Neg. Gaz., 8th Year, no 33, Preamble; Chat Excise Tax Proclamation (CETP), no 767/2012, Neg. Gaz., 18th Year, no 60, Preamble.

[217] EFWRMP (n121) Article 2(4) (5) (6); AAEPCR (n113) Article 2(13).

[218] EFWRMP ibid Article 2(19); EWRMP (n26) Introduction.

[219] EFWRMP ibid Article 2(10); AACESR (n178) Article 2(12); AAEPCR (n113) Article 2(13); See details of untreated water in PHP (n125) 2(11).

[220] EFWRMP ibid Article 2(12). 'Polluted water means sewage and industrial effluents including toxic water.' EFWRMP (n121) Article 2(11). 'Depletion of water means a decrease in the quality of water below its normal level at a given season, whether due to man-made or natural causes.' EFWRMP (n121) Article 2(1).

A. Federal government effluent tax

In Ethiopia the federal government has the mandate to determine and administer the utilisation of the waters or rivers and lakes linking two/more states or crossing the national jurisdiction.[221]

As a result, subject to treatment, permit and renewal,[222] it has the mandate to collect service fees for permits and effluent charges for the discharge of waste into water resources.[223] The service fee shall be paid on the basis of the fees specified in schedule one of the regulation,[224] and the amount of charges for the discharge of waste into water resources shall be paid on the basis of schedule two of the regulation.[225]

These are, therefore, the legal seeds for effluent tax that are instrumental in the restoration of the authorised degradation of the water resources of the federal jurisdiction of Ethiopia.

B. Addis Ababa administration sludge and sewer charges

The Water and Sewerage Authority of the Addis Ababa Administration has the duty to provide wastewater and sludge disposal services and other services related thereto for consideration,[226] and all persons have the duty to pay commensurate sanitation fees or special taxes.[227]

In this regard, the administration has the following charging modalities:

Sludge charges: Sludge means the content of any wastewater that is settled in wastewater facilities.[228] Customers are required

---

[221] FDREC (n16) Article 51(11); See also 55(2) (a).

[222] EFWRMP (n121) Article 6(4), 11 and 13(2); EWRMR (n123) Article 3, 5, 11 and 13; AAWMCDR (n19) Article 20(3); AAWMCDR (n19) Article 20(2).

[223] EFWRMP ibid Article 20(1) (c) and 22. Charging for the treatment of effluent or waste products provides an incentive to reduce emissions or waste generation at the source. IBRD/WB (n6) at 34.

[224] EFWRMP ibid Article 20(3); EWRMR (n123) Article 30.

[225] EFWRMP ibid Article 22(1); EWRMR ibid Article 32(1).

[226] FPCP (n18) Article 5(1); AAEMSORP (n34) Article 53 (6) and 59; Addis Ababa Water and Sewerage Authority Re-establishment Proclamation (AAWSARP), no 10/1995, Neg. Gaz., 18th Year, no 3, Article 7(1), 25, 5(1)(b).

[227] AAWMCDR (n19) Article 25(1).

[228] AAWSARP (n226) Article 2(22).

to pay sludge service charges to the Authority as indicated in the schedules of the regulations.[229]

These are, therefore, the legal seeds of sludge charge that are instrumental in the internalisation of the cost of their collection, transportation and disposal under the federal jurisdiction of Ethiopia.

Sewer charges: Sewer means a system of removing wastewater through a network of pipelines to wastewater treatment plants,[230] and sewer service is the collection, treatment and disposal of wastewater/sewage.[231]

Subject to the quality,[232] effluent and/or stream standard and permit by a supervising body,[233] the sewer service is subject to a tariff under schedule one of the regulations.[234]

Concurrently, the treated effluent sewage from the Kaliti-Waste-Treatment Plant to the Akaki River is subject to schedule two discharge charges under the federal regulation.[235]

These, therefore, are the legal seeds of sewer charges that are instrumental in the internalisation of the cost of sewer services of the federal jurisdiction of Ethiopia.

Water consumption charge: In conformance with the user pays principle,[236] the supply of water is subject to a value-added tax[237] and progressive and differential water tariffs.[238]

These are, therefore, the legal seeds for water consumption taxes and tariffs that reinforce the rational use of water resources under the federal jurisdiction of Ethiopia.

---

[229] The Addis Ababa Water Supply and Sewerage Disposal Services Regulations no 5/1995 (Repealing) Regulations (AAWSSDSRRR), no 31/2002, Neg. Gaz., 5th Year, no 1, Article 6(1) and (2).

[230] AAWSARP (n226) Article 2(20).

[231] Ibid Article 2(21).

[232] AAWSSDSRRR (n229) Article 32.

[233] EFWRMP (n121) Article 13(2); EWRMR (n123) Article 5 and 11.

[234] AAWSSDSRRR (n229) Schedule 1.

[235] EFWRMP (n121) Article 22(1); EWRMR (n123) Article 32(1). Being that the Akaki River is a trans-national river, it is subject to federal jurisdiction. FDREC (n16) Article 51(11) and 55(2) (a).

[236] EWRMP (n26) 3(3.3.1.4) (C) (1), 30.

[237] VATP (n216) Article 8(2)(i); Value Added Tax Regulation (VATR), no 79/2002, Neg. Gaz., 9th Year, no 19, Article 27.

[238] EFWRMP (n121) Article 21; EWRMR (n123) Article 31; AAWSSDSRRR (n229) Schedule 1.

5.3.3 Emission tax[239]

Air means the natural mixture of gases,[240] air pollutant is any harmful substance in the air,[241] and air pollution is the contamination of the atmosphere with undesirable solids, liquids and gases.[242]

A. Carbon tax, cap-and-trade system and hybrid policy

In Ethiopia, competent agencies, with the objective of minimizing/avoiding environmental damage,[243] can grant a license after verifying that the effluent will not exceed the standard.[244] Concurrently, they shall also issue permits and/or renewals on the basis of the polluter-pays principle.[245]

Along with this, a system has to be designed to delineate how a polluter will be held responsible for activity that causes damage and for reinstating the polluted air to its original condition.[246] Consequently, there is legal room for the introduction of well-designed emission pricing and abatement systems of carbon tax,[247] cap-and-trade[248] and hybrid systems.[249]

Therefore, subject to the *threshold* and *net zero-emission* aspiration of 2025, there is legal room for the introduction of carbon tax, cap-and-trade and hybrid systems that are instrumental

---

[239] One of the targets of the Growth Transformation Plan is strengthening a climate change-resistant green economy and building a carbon-free economy by 2025. GTPE I (n125) at 8.9.3.

[240] AAEPCR (n113) Article 2(6).

[241] Markandya et al (n73) at 7.

[242] Gilpin (n108) at 5.

[243] AAEPCR (n113) Article 14(1).

[244] PIPCMR (n123) Article 5.

[245] AAEPCR (n113) Article 14(4) (5). 'Environmental permits also need to be reviewed with the aim of improving the overall environmental quality to create resilience.' Verschuuren (n129) at 386.

[246] AAEPCR ibid Article 4(4).

[247] If pollution is measurable, the government may set a 'Pigouvian tax' on pollution equal to the marginal external cost of environmental damage, thereby providing the correct incentive to private agents. Alm and Banzhaf (n15) at 177.

[248] See details in Alm and Banzhaf (n15) at 177 and 180.

[249] Lawrence H. Goulder 'Carbon taxes versus cap and trade: A critical review' (2013) Climate Change Economics 4(3) at 1350010-24 and 25; Robert N. Stavin 'Cap-and-trade or a carbon tax?' (2008) The Environmental Forum 16.

in the restoration of authorised degradation of the air of the federal jurisdiction of Ethiopia.

B. Consumption tax on hazardous goods

Fiscal systems traditionally employ a variety of consumption taxes for mixed purposes of raising revenue, adjusting tax equity or increasing the cost of a product to reduce consumption.[250]

In the same manner, in Ethiopia the excise tax calls for the imposition of taxes on both locally produced and imported hazardous goods and the reduction of their consumption.[251] Consequently, these goods are subject to the rate prescribed in the excise tax schedule.[252]

As a result, the direct/proxy bases for this tax encompass tobacco and its products, fuel such as super benzene, regular benzene, petrol, gasoline and motor spirits, vehicles and asbestos and its products.[253]

At the same time, the value-added tax[254] on kerosene, petroleum, electricity[255] and transportation[256] and the differential electric consumption tariff[257] are instrumental in reinforcing the reduction of the generation of emission.

---

[250] Gains and Westin (n100) at 8.

[251] Federal Excise Tax Proclamation (FETP), no 307/2002, Neg. Gaz., 9th Year, no 20, Preamble. Its scope is delimited to goods listed in the schedule attached to the proclamation. FETP (n251) Article 3. Excise tax is one of the typologies of regulatory taxes that can force people to reconsider certain socially undesirable decisions/behaviour. Pitrone (n5) at 122.

[252] FETP ibid Article 4.

[253] Ibid at Schedule. Administrative costs may necessitate the taxation of proxies to environmentally harmful activities, but care should be taken not to impair environmental outcomes. OECD (n106) 4 and 12; IBRD/WB (n6) at 36. When the costs of observing, measuring and monitoring the actual emissions are high, indirect instruments are preferable.

[254] VATP (n216) Preamble. 'By introducing environment-friendly principles into the VAT legislation, governments can influence environmental attitude and behaviour at the ground level.' Botes (140) 98; European Commission Environmental Taxes – Revised Statistical Guide (2013) 15-16.

[255] VATP ibid Article 8(2) (i).

[256] Ibid Article 8(2) (l).

[257] Ethiopian Electric Power Corporation/Home, available at www.eepco.gov.et/, accessed on 8 June 2016. The development of energy projects, energy generation, transmission and use has to be benign to the environment. NEPE (n125) no 6.4.1.

These are, therefore, the legal seeds for consumption taxes that are instrumental in shifting consumption patterns toward environmentally friendly ones under the federal jurisdiction of Ethiopia.

5.3.4 Royalties

Overuse of natural resources through open and unrestricted access is a recurring environmental problem; often it is referred as the 'tragedy of the commons'.[258] Conversely, depending on property rights and external costs, royalties from resource extraction could be captured at the source where they are haphazardly depleted.[259]

In Ethiopia, states have the mandate to determine and collect fees for land usufructuary rights,[260] royalties for the use of forest resources[261] and royalties from access to genetic resources.[262] Likewise, the federal and state governments have the mandate in their respective jurisdictions to collect royalties, land rentals, taxes and fees from mining, petroleum and gas operations.[263]

These are, therefore, the legal seeds for royalties that are instrumental in encouraging the rational use of scarce natural resources.

Briefly, section eight has revealed a range of environmental taxes that encourage a more equal mix between cleaner production processes, innovation, end-of-pipe abatement measures, adoption and development of less-polluting products and reducing consumption.

---

[258] UNEP (n11) at 58; See details in Garrett Hardin 'The tragedy of the commons', available at *www.environnement.ens.fr/IMG/pdf/**hardin**_1968.pdf*, accessed on 8 June2016; Markandya et al (n73) at 178.

[259] IBRD/WB (n6) at 32; UNEP (n11) at 55. See 'Royalty' in Markandya et al (n73) at 57.

[260] FDREC (n16) Article 97(2); AACGRCP (n19) Article 52(2).

[261] FDREC ibid Article 97(10); AACGRCP ibid Article 52(13); FDCUP (n123) Article 18(7). 'Royalty or service fee' means a service fee paid by customers to get permission for tree cutting. Addis Ababa City Government Forest and Riverside Areas Development, Protection and Utilization Regulation (AAFRADPUR).

[262] AGRCKCRP (n121) Preamble, Article 19(1) (4).

[263] FDREC (n16) Article 97(8) and 98(3); AACGRCP (n19) Article 52(12); EMP (n121) Article 37, 38, 39 and 40; MOCMR (n123) Article 32, 33 and 34; MITP (n123) Article 3. 'Mining royalty revenues reached ETB 130 million in 2009/10.' GTPE I (n125) at 1.2.3.

6 CONCLUSION

This research was designed to appraise the nature and functions of the polluter-pays principle, the technical justifications for environmental tax and the instrumental roles of the introduction of solid waste, sludge and sewer charges, effluent charges, carbon tax and cap-and-trade, consumption taxes and royalties in the realisation of the polluter-pays principle under the federal jurisdiction of Ethiopia. Consequently, it has demonstrated the:

(1) Recognition of polluter-pays as a principle, rule and policy with the different respective functions and meanings to reach the idea of sustainable development,
(2) Incorporation of degradation/pollution-based complementary and/or exclusive redistributive, preventive and curative functions of the polluter-pays principle,
(3) Market failure to internalise externalities and the inefficacy of command-and-control instruments to give price signals at each unit of residual damage, which constitute the technical justification for the introduction of an environmental tax,
(4) Variation of the threshold-bound distributive and incentive bases of environmental tax according to the functions of the polluter-pays principle,
(5) Distributive/incentive-based instrumental roles of:
    – Municipal and treated hazardous solid wastes, sludge and sewer charges in covering the cost of their collection, transportation, treatment and disposal,
    – Effluent charges in restoring authorised water resources degradation,
    – Carbon tax and cap-and-trade in restoring authorised air degradation,
    – Consumption taxes in reinforcing environmental friendly patterns of consumption and
    – Royalties in encouraging the rational use of scarce natural resources.

Finally, it has implied that the realisation of the polluter-pays principle is partly contingent on setting up a wide range of legally viable and administratively feasible environmental taxes.

Chapter Three:

Towards Sustainable Waste Management through Cautious Design of Environmental Taxes: The Case of Ethiopia

sustainability

MDPI

Article

Towards Sustainable Waste Management through Cautious Design of Environmental Taxes: The Case of Ethiopia †

Merhatbeb Teklemedhn Gebregiorgs [1,2]

[1] Tilburg Law School, Tilburg University, 5037 AB Tilburg, The Netherlands; M.T.Gebregiorgs@tilburguniversity.edu
[2] School of Law, Mekelle University, Mekelle 231, Ethiopia

† This research is conducted under the affiliation of Tilburg Law School, Tilburg University, Tilburg, The Netherlands; and Mekelle University School of Law, Mekelle, Ethiopia, under the supervision of Professor Dr. Jonathan Verschuuren.

Received: 25 June 2018; Accepted: 9 August 2018; Published: 30 August 2018

Abstract: This research examines the viability of the design of environmental taxes in the achievement of sustainable waste management in the Addis Ababa Administration (AAA) of Ethiopia. It has employed an empirical qualitative method. It first shows the mutual contribution of the achievement of waste management to the progress of sustainable sanitation and water resource management. Secondly, it displays the distributive and incentive roles of environmental taxes in the achievement of sustainable waste management. Thirdly, it indicates that a cautious design of the source, base, scope and rate of environmental taxes is a critical determinant for environmental taxes' overall success in addressing the prevalent waste mismanagement in Ethiopia. Fourthly, it demonstrates that in the AAA: (1) The sources of solid waste collection, landfill, sewerage service and effluent charges are subject to the principle of legality; (2) the scope of solid waste collection, landfill, sewerage service and effluent charges is appropriate; (3) while the base of sewerage service and effluent charges is efficient, the base of solid waste and landfill charges is not at all efficient; and (4) while the rates of solid waste, landfill and sewerage service charges are slightly optimal, the rate of the effluent charge has not yet developed. Fifthly, it reveals that, having a somewhat viable design, solid waste, landfill and sewerage service charges are marginally reinforcing the aspiration of Ethiopia to achieve sustainable sanitation. Sixthly, it uncovers that because Ethiopia has not yet developed the rate of effluent charge, effluent charge is neither internalizing the cost of water resource degradation nor incentivizing sustainable water resource management. Finally, it implies that the aspiration of Ethiopia to achieve sustainable sanitation and water resource management by 2030 is contingent on the cautious design of its waste management taxes.

Keywords: SDGs; sustainable waste management; the PPP; environmental taxes

1. Introduction

1.1. Background of the Research

Sustainable waste management is one the goals of sustainable development (2030 Agenda for SD Goal 6) [1], and it is applicable both in developed and least developed countries (Agenda for SD at 2, 3, 11 and 12) [1].

The proper implementation of sustainable waste management mutually enhances the progress of sustainable sanitation and water resource management (AA AA TICFD at 5, 6) [2,3].

Sustainable waste management is defined as 'using material resources efficiently to cut down on the amount of waste produced, and, where waste is generated, dealing with it in a way that actively contributes to sustainable development goals' [4]. Accordingly, the waste management hierarchy that shall apply as a priority order in waste prevention and management legislation and policy consists of prevention, re-use, recycling, recovery and disposal (Directive 2008/98/EC Art 4) [4].

Price-based instruments were first suggested by Pigou in 1920 in the form of taxes and subsidies to deal with detrimental and beneficial environmental externalities [5–7]. Subsequently, different sources endorsed the use of environmental taxes to achieve sustainable waste management based on the polluter-pays principle (PPP) [4,8–11].

Concurrently, De Sadeleer verified that the variation of the distributive and incentive roles of environmental taxes is according to the redistributive or incentive function of the PPP (De Sadeleer, N. at 44, 46) [12].

In addition, cautious design of the source, base, scope and rate of environmental taxes is a critical determinant for their overall success in the full range of waste abatement options (see details in Section 6).

1.2. Statement of the Problem

Ethiopia is committed to sustainable development (see details in Section 3) and introducing incentives and disincentives to discourage practices that hamper the sustainable use of natural resources and the prevention of environmental degradation and pollution (DPDEOFDREA Art 4 (33) (1) (k); DPDEOFDRE; FEPOEP Art 6 (12)) [13–15]. Moreover, each of its urban administrations has the duty to ensure environmental tax-based sustainable waste management (Gebregiorgs, M. T. (2016) at 35–39) [11].

In addition, its law must provide a broad framework for both punitive and incentive measures, and where possible its tax structure has to be designed in a way that provides environmentally friendly positive incentives and negative incentives (EPE No. 5.2 (f); NCS II No. 3.6.2 (124) (g) (k); EWRMP No. 1 (1.3) (3), 2 (2.2.5) (B) (1) and (2); EWSS at 5) [16–19].

Ethiopia has given recognition to the PPP with its redistributive, preventive and incentive functions (Gebregiorgs, M. T. (2016) at 28–32) [11]. Moreover, earlier research by this author shows that the variation of the distributive and incentive roles of environmental taxes is according to the functions of the PPP (Gebregiorgs, M. T. (2016) at 14, 15, 19 and 20; De Sadeleer, N. at 46) [11,12]. In addition, it has demonstrated the instrumental roles of solid waste, landfill, sewerage service and effluent charges in the realization of sustainable waste management (Gebregiorgs, M. T. (2016) at 35–39) [11].

Nevertheless, at the moment, Ethiopia in general and Addis Ababa in particular exposed to water resources degradation associated with effluent [18,20–25], and to the mismanagement of solid waste (AACAASWP at 1; Bjerkli, C. L. 1277–1278) [26,27], sludge, and sewage [28–30]. Furthermore, the social cost of the waste management of public authorities in the Addis Ababa Administration (AAA) is mainly covered through public subsidy [31–34].

Different sources associate unsustainable waste management with the absence of a cautious design of the source, base, scope and rate of environmental taxes (see details in Section 6). Therefore, this research will assess the viability of the design of the source, base, scope and rate of environmental taxes in the achievement of sustainable waste management in the AAA of Ethiopia.

1.3. Research Questions

1.3.1. Basic Research Question

How viable is the design of solid waste, landfill, sewerage service and effluent charges in the achievement of sustainable waste management in the AAA of Ethiopia?

1.3.2. Specific Research Questions

How viable is the design of the source, base, scope and rate of:

a. Solid waste and landfill charges in the achievement of sustainable solid waste management,
b. Sewerage service charges in the achievement of sustainable sewerage service, and
c. Effluent charges in the achievement of the sustainable restoration of authorized water resources degradation in the AAA of Ethiopia?

2. Methodology

The research is delimited to the self-governing AAA, which is the capital city of Ethiopia and an integral part of the federal jurisdiction (FDREC Art 49 (1) (2) (3); AACGRCP Art 17 (1), 61 (2)) [35,36]. The research has employed an empirical qualitative method to assess the viability of the design of environmental taxes in the achievement of sustainable waste management in the AAA of Ethiopia. The qualitative analysis is iterative. Inferences are drawn through interpretation, and their validity is assured through primary and secondary data source triangulation. In this research, the design of the source, base, scope and rate of solid waste, landfill, sewerage service, and effluent charges is viable when the source is subject to the principle of legality, the scope is appropriate, the base is efficient, and the rate is optimal. The operationalization of the key words has been done in Section 7, through the development of a literature review-based normative framework in the context of sustainable waste management. Parallel to this, the research has used federal and AAA environmental and tax laws, official documents, key informant interviews, focus group discussions (FGD), and observation as the major sources of data on the law and practice of environmental tax-based waste management in the AAA of Ethiopia. Purposive sampling was used to select the key informants as well as the solid waste and effluent tax FGD participants, who are mainly from the Cleanliness Administration Agency; Solid Waste Re-use and Disposal Project Office; Water and Sewerage Authority; Environmental Protection Authority of the AAA; the Ministry of Water, Irrigation and Electricity; and the Ministry of Environment, Forest and Climate Change of Ethiopia. Finally, the legal and empirical data of the research is triangulated, interpreted and tested against the normative framework, and then concluding remarks and implications are presented.

Organization of the Article

The article is organized into eight further sections. After this introduction, Section 3 deals with the idea of sustainable development. Section 4 looks at sustainable waste management. Section 5 considers the polluter-pays principle. Section 6 appraises the nature, source, role, base, scope and rate of environmental tax. Section 7 develops a normative framework for the use of environmental taxes to achieve sustainable waste management. Section 8 assesses the viability of the design of the source, base, scope, and rate of environmental taxes in the achievement of sustainable waste management in the AAA of Ethiopia. Finally, Section 9 presents the conclusion and implication of the research.

3. The Ideal of Sustainable Development

Sustainable development [37] provides the general framework for all environmental issues (Cullet, P. at 354) [38]. The ideal (goal) of sustainable development [39,40] renders a high moral value to environmental law principles, which are meant to implement the ideal of sustainable development (Verschuuren, J. (2006) at 1; Bell, S.; McGillivray, D. at 54) [40,41]. As such, they form a necessary link between legal rules and the ideal of sustainable development (Verschuuren, J. (2006) at 2, 52, 53; Bosselmann, K. at 48) [40,42].

Sustainable development goals (SDGs) are global in nature and universally applicable. They are integrated and indivisible (2030 Agenda for SD at 2, 3, 11, 12) [1], and the achievement of a particular SDG mutually contributes to the progress of other SDGs [2,3]. Accordingly, the proper implementation of waste management mutually enhances the progress of sustainable sanitation (2030 Agenda for SD at 12) [1] and water resource management (2030 Agenda for SD at 12) [1].

Correspondingly, Ethiopia has national [16–19,35,43–53] and international [1,8,9,35,54–58] commitment to the idea of sustainable development. In addition, it has embraced the 2030 Agenda for Sustainable Development, Agenda 2063 of Africa, and the Addis Ababa Action Agenda, and by 2030 it is aspiring to achieve sustainable sanitation and water resource management [1,52,53].

4. Sustainable Waste Management

Sustainable waste management [4] is one the goals of sustainable development (2030 Agenda for SD at 12) [1], and it is defined as 'using material resources efficiently to cut down on the amount of waste produced, and, where waste is generated, dealing with it in a way that actively contributes to SDGs' [4].

The various waste management options can be placed in an order known as the waste management hierarchy which reflects the relative sustainability of each [4]. Accordingly, the waste management hierarchy that shall apply as a priority order in waste prevention and management legislation and policy consists of prevention, re-use, recycling, recovery and disposal (Directive 2008/98/ECArt 4) [4].

In addition, different sources endorsed the use of environmental taxes to achieve sustainable waste management based on the PPP (Agenda 21 at 264, 2.14 (c), 4.24; Rio Declaration Principle 16; Snape, J.; de Souza, J. at 14; Gebregiorgs, M. T. (2016)) [8–11]. Correspondingly, the cautious design of the source, base, scope and rate of environmental taxes is a critical determinant for their overall success in the full range of waste abatement options (see details in Section 6).

5. The Polluter-Pays Principle

The word environment is derived from the French word *environner,* which means to encircle (Shelton, D.; Kiss, A. at 4) [59], and it is a union of abiotic and biotic factors (Gilpin, A. at 92) [60] of renewable/non-renewable natural resources (Markandya, A. et al. at 79–80) [61].

Pollution/depletion, where private benefits and costs diverge from social benefits and costs (Pigou, A. C. at 172–203; Markandya, A. et al. at 94; Alm, J.; Banzhaf, H. S. at 178) [5,61,62], is one of the classic cases of negative externality (Pigou, A. C. at 21; De Sadeleer, N. at 21; Bell, S.; McGillivray, D. at 239; Markandya, A. et al. at 5, 94; OECD (2001) at 19) [5,12,41,61,63]. Concurrently, pollutant means any substance, whether liquid, solid or gas, that is intentionally/unintentionally released (FPCP Art 2 (15); AAEPCR Art 2 (14)) [45,64] and directly/indirectly adversely affects the quality of the environment (FPCP Art 2 (11); AAEPCR Art 2 (12)) [45,64].

The PPP is one of the main outlines of sustainable development (Snape, J.; de Souza, J. at 111) [10], and it is a framework where environmental protection and environmental taxation meet (Pitrone, F. at 130) [65]. Correspondingly, it has the following functions, as discussion in Sections 5.1 and 5.2.

5.1. Redistributive Function of the PPP

One of the main functions of the PPP is an internalization of public authorities' social costs for pollution prevention and control (De Sadeleer, N. at 35) [12] and the safeguarding of the public budget allocation for it (Pitrone, F. at 136) [65]. Hence, polluters should reimburse the state's expenditures for pollution prevention and control (De Sadeleer, N. at 35; Shelton, D.; Kiss, A. at 4; Wolf, S.; Stanley, N. at 17; Kiss, A.; Shelton, D. at 95; Ashford, N. A.; Caldart, C. C. at 174) [12,59,66–68]. The redistributive function of the PPP thus envisages the internalization of the social costs borne by the public authorities for pollution prevention and control (De Sadeleer, N. at 311) [12].

From a scientific angle, degradation relates more to introducing pollutants into the ecosystem than to crossing a threshold of irreversibility. Setting an emission threshold necessarily leads to degradation that compromises the regenerative capacity of water, soil and air (De Sadeleer, N. at 37) [12]. Therefore, by stressing the curative dimension, the PPP should give rise to liability for residual damage that occurs due to authorized release and the inadequacy of established discharge thresholds (De Sadeleer, N. at 37) [12].

5.2. Incentive Function of the PPP

From the legal perspective, the PPP, with the objective of ensuring a coherent environmental policy, should be consistent with the principle of prevention. From an economic point of view, if the costs polluters must bear are greater than the benefits they anticipate from continuing their harmful behavior, they are encouraged to reduce pollution to the optimal level (De Sadeleer, N. at 36) [12].

Put at the service of prevention, the PPP means not allowing a polluter who pays to continue polluting with impunity. It therefore aims to encourage polluters to reduce their waste, and alter their waste generating behavior, rather than being content to pay taxes (Pearce, D. at 2) [69].

6. Nature, Source, Roles, Base, Scope and Rate of Environmental Tax

6.1. Nature of Environmental Tax

A levy is a tax if it is compulsory, legally enforceable, levied by a public body and intended for a public purpose, and it can be used to cover taxes, fees and charges (Snape, J.; de Souza, J. at 5; IBRD/WB at 33) [10,70].

On the basis of the European Union's Eurostat:

> A tax falls into the category of environmental if the *tax base* is a *physical unit* (or a *proxy for it*) of something that has a proven specific negative impact on the environment, when used or released (European Commission at 9) [71].

The OECD, however, favors the terminology 'environmentally related tax' and defines it as 'any compulsory, unrequited payment to general government levied on tax-bases deemed to be of particular environmental relevance. Taxes are unrequited in the sense that benefits provided by government to tax payers are not normally in proportion to their payments (OECD (2001) at 15) [63].'

As a result, the name/stated purpose of a given fiscal instrument is not necessarily a universally applicable criterion for appraising the category of environmental tax (Joseph, S-A. at 188–190; IBRD/WB at 33) [7,70].

Correspondingly, on the basis of the definition of fiscal neutrality, a tax system should be designed so as primarily to raise revenue and not to encourage/discourage certain activities/behavior. Nevertheless, since fiscal neutrality is optimal only in the absence of externalities, changing the fiscal system in order to correct market failures is fully consistent with it. Therefore, even if environmental tax is not neutral, it is by default consistent with fiscal neutrality (Barde, J.-P. at 18) [72].

Correspondingly, in Ethiopia solid waste, landfill, sewerage service and effluent charges are indeed within the domain of the definition and nature of environmental tax set above [11].

6.2. Source of Environmental Tax

The modern principle of tax legality is a derivation from the great historical battles fought between legislative and executive bodies over the power of taxation (Taddese, L. at 335; Rodi, M.; Ashiabor, H. at 70) [73,74].

At the minimum, the principle of tax legality means that taxation must have a legal basis, and this is recognized as a constitutional precept in most legal systems (Vanistendael, F. at 2) [75].

Since environmental tax is part of a tax system, the legal authority enacting environmental taxes must consider the principle of legality in the context of rule of law (Rodi, M.; Ashiabor, H. at 59, 71, 74 [74]. Equally, the source of environmental taxes is subject to the principle of legality, and it has to be set up by legislative acts.

6.3. Instrumental Roles of Environmental Tax

The bases of environmental tax vary according to the redistributive or incentive function of the PPP (De Sadeleer, N. at 46) [12]. Correspondingly, this section is allocated to appraise the distributive and incentive roles of environmental taxes in the achievement of sustainable waste management.

6.3.1. Distributive Roles of Environmental Tax

Environmental fiscal reform opens the door to a new tax base, supplementing other revenue-raising efforts (IBRD/WB at 17) [70]. The underlying rationale of payment for ecosystem services is that beneficiaries of ecosystem services should compensate the stewards that maintain these services (Gomez-Baggethun, E.; Ruiz-Perez, M. at 7; UNEP at 26) [76,77]. As a result, when an environmental tax fulfills a redistributive function, the tax should be proportional to the pollution (De Sadeleer, N. at 46) [12] and the environmental risk created by commercialization (De Sadeleer, N. at 47) [12].

On the basis of the benefits received theory, the state provides various public goods and services to the society, and beneficiaries contribute in proportion to the benefits received (UNEP at 24; Bhatia, H. L. at 56) [77,78]. Accordingly, the distributive role assigned to environmental taxes argues in favor of the allocation of the revenue of environmental taxes for financing the environmental goal they target (De Sadeleer, N. at 47 and 48) [12].

Therefore, the distributive role of environmental tax is maintaining the ecosystem service and internalizing the social costs to the public authorities for pollution prevention and control (De Sadeleer, N. at 35, 47, 48; IBRD/WB at 20) [12,70]. Mutatis mutandis, one of the distributive roles of environmental taxes is internalizing the social cost of public authorities for waste collection, transportation, treatment and disposal.

6.3.2. Incentive Roles of Environmental Tax

An environmental tax is a fiscal instrument (Pitrone, F. at 127; Gaines, S. E.; Westin, R. A. at 10; Fasil, N. at 200) [65,79,80] that sends environmentally friendly signals to consumers and industrialists (Wolf, S.; Stanley, N. at 472) [66]. These taxes are the most emblematic instruments of the simultaneous intervention of the polluter-pays and prevention principles (De Sadeleer, N. at 47) [12].

Their incentive role encompasses a wide range of environmental taxes and encourages a more equal mix between cleaner production processes (De Sadeleer, N. at 47; Bell, S.; McGillivray, D. at 239; OECD (2001) at 20; IBRD/WB at 36; Kosonen, K. at 1) [12,41,63,70,81], innovation (Alm, J.; Banzhaf, H. S. at 179; Kolstad, C. D. at 151; Kosonen, K. at 1; Stewart, R. B. at 174) [62,82–84], end-of-pipe abatement measures (UNEP at 23; Stewart, R. B. at 175–176) [77,84], adoption of products that cause less pollution, development of less-polluting products and reduction of consumption (OECD (2011) at 4) [85]. Mutatis mutandis, one of the incentive roles of environmental taxes is encouraging the full range of waste abatement options.

6.4. Base of Environmental Tax

Environmental tax bases should be targeted to the pollutant (FPCP Art 2 (11); AAEPCR Art 2 (12)) [45,64] or the polluting behavior (OECD (2011) at 4) [84]. Using the tax to increase the market cost of the polluting activity helps to incentivize the full range of potential abatement options (OECD (2011) at 4) [85].

Alternatively, when taxing the pollutant directly is not administratively feasible, a close proxy for the polluting activity can provide a good tax base (OECD (2011) at 4) [85]. Nevertheless, it is important to note that levying the tax (OECD (2011) at 4) [85]:

a. At higher levels of the supply chain would not treat the full range of solutions equally;
b. On intermediate goods constitutes an implicit tax that may not be transparent and can contribute to misspecification of tax rates.

In parallel, tax reform should take care of statutory incidence, which refers to who legally pays the tax, as well as economic incidence, which refers to who really bears the burden of the tax (Kosonen, K. at 2) [82].

Mutatis mutandis, in waste management, the base of an environmental tax is efficient when it is targeted to the waste or waste-generating behavior, which helps to incentivize the full range of waste abatement options and can contribute to specification of an optimal tax rate.

6.5. Scope of Environmental Tax in a Federal System

A well-drafted tax law has to precisely spell out all the matters that are within its scope [74]. The scope of environmental tax is appropriate when it is as broad as the scope of the environmental damage being addressed (OECD (2011) at 5) [85].

The scope of environmental tax has implications for the level of political jurisdiction that imposes the tax (OECD (2011) at 5) [85]. Accordingly, if a fully functioning federal system (Vanistendael, F. at 49; Fasil, N. at 38) [75,80] offers some choice as to the level of government that should act to reduce environmental pollution, the first and most important principle is the geographic scope of the externality. If the effects of waste fall within the same jurisdiction as the source, then local governments are probably best situated to address the externality. However, if the waste has significant transboundary effects, then the national government is better positioned to address it (Alm, J.; Banzhaf, H. S. at 196, 197) [62]. The second principle is that the instrument should be consistent with the fiscal needs of the level of government (Alm, J.; Banzhaf, H. S. at 187, 197) [62].

Mutatis mutandis, the scope of environmental tax in a federal system is appropriate when it is as broad as the scope of the waste being addressed, and it is consistent with the fiscal needs of the federal and regional waste management organs.

6.6. Rate of Environmental Tax

According to Pigou, the optimal tax rate is where the marginal benefit of abatement equals the marginal cost of abatement [5]. Increasing and lowering of tax rates is one of the instruments for manipulating the fiscal policy of a government (Fasil, N. at 200) [80].

Since environmental taxes are part of the environmental policy instrument tool box, their tax rates should be in line with environmental policy objectives (Rodi, M.; Ashiabor, H. at 70) [74]. Equally, to reach an environmental objective, it is important that the rate of an environmental tax is set at a correct level. A levy that is too low will not be able to fully correct a distortion in the market, while a levy that is too high replaces one distortion with another (Commission of the European Communities at 1) [86].

Mutatis mutandis, the rate of environmental tax is optimal when it is commensurate with the cost of waste management, and it creates an incentive for the realization of sustainable waste management (Directive 2008/98/EC Preamble No. 25, Art 14 (1); De Sadeleer, N. at 46 and 47; OECD (2011) at 1) [4,12,85].

7. Interim Conclusion: Normative Framework for the Use of Environmental Taxes to Achieve Sustainable Waste Management

Sustainable waste management is one the goals of sustainable development (2030 Agenda for SD at 12) [1], and it is defined as 'using material resources efficiently to cut down on the amount of waste produced, and, where waste is generated, dealing with it in a way that actively contributes to SDGs' [4]. Accordingly, the waste management hierarchy that shall apply as a priority order in waste prevention and management legislation and policy consists of prevention, re-use, recycling, recovery and disposal (Directive 2008/98/EC Art 4) [4].

Different sources have endorsed the use of environmental taxes to achieve sustainable waste management based on the PPP (Agenda 21 at 264, 2.14 (c) and 4.24; Rio Declaration Principle 16; Snape, J.; de Souza, J. at 14; Gebregiorgs, M. T. (2016)) [8–11]. Concomitantly, cautious design of the source, base, scope and rate of environmental taxes is a critical determinant for their overall success in the full range of waste abatement options (see details in Section 6). Correspondingly, the following are the interim conclusions of this research:

1. The distributive and incentive roles of environmental taxes vary according to the redistributive or incentive function of the PPP (for details, see Sections 5 and 6.3),
2. SDGs are integrated and indivisible, and the achievement of one SDG mutually contributes to the progress of others (for details, see Sections 3 and 4),

3. The proper implementation of waste prevention, re-use, recycling, recovery and disposal mutually contributes to the progress of sustainable sanitation and water resource management (for details, see Section 4),
4. To avoid taxation without representation, the source of environmental taxes must be subject to the principle of legality in the context of rule of law (for details, see Section 6.2),
5. The scope of environmental tax in a federal system is appropriate when it is as broad as the scope of the waste being addressed and it is consistent with the fiscal needs of the federal and regional waste management organs (for details, see Section 6.5),
6. The base of environmental tax is efficient when it is targeted to the waste or waste generating behavior and it helps to incentivize the full range of waste abatement options and can contribute to specification of an optimal tax rate (for details, see Section 6.4), and
7. The rate of environmental tax is optimal when it is commensurate with the cost of waste management and it creates an incentive for the realization of sustainable waste management (for details, see Section 6.6).

Ethiopia is committed to a federal system, sustainable waste management, the PPP and the distributive and incentive roles of environmental taxes in the achievement of sustainable waste management. Correspondingly, in this research, the design of solid waste, landfill, sewerage service and effluent charges is considered to be viable in the achievement of sustainable waste management when the source is subject to the principle of legality, the scope is appropriate, the base is efficient, and the rate is optimal.

8. The Viability of the Design of Environmental Taxes in the Achievement of Sustainable Waste Management in the AAA of Ethiopia

8.1. Constitutional and International Law Bases of Environmental Taxes in Ethiopia

8.1.1. Constitutional Law

Environmental tax law is subject to the constitutional precondition of a given nation and in some cases to the relevant international laws (Rodi, M.; Ashiabor, H. at 59) [74].

The federal constitution of Ethiopia is the supreme law of the land (FDREC Art 9 (1)) [35], and the fundamental authority to tax is derived from it (Taddese, L. at 330) [73]. Even though the constitution does not explicitly require taxation to have a firm basis in law, it can be inferred from its provisions that it grants the federal and regional legislative organs the power to impose taxes on their respective sources (FDREC Art 51, 52, 55; Taddese, L. at 337) [35,73].

On the basis of its directives on taxation (FDREC Art 100) [35]:

1. In exercising their taxing powers, States and the Federal Government shall ensure that any tax is related to the source of revenue taxed and that it is determined following proper considerations.
2. They shall ensure that the tax does not adversely affect their relationship and that the rate and amount of taxes shall be commensurate with services the taxes help deliver.

In addition, the scope of the constitution regarding tax is broadly designed in a way that it encompasses both federal and states' benefit and non-benefit taxes, which are the bases of a range of environmental taxes (FDREC Art 96, 97 and 98; AACGRCP Art 52, 53, 61) [35,36].

8.1.2. International Law

'The authority of the state to legislate in tax matters may be limited by international treaties and agreements' (Vanistendael, F. at 16) [75]. Equally, the authority to legislate environmental taxes must safeguard the framework of public international law (Rodi, M.; Ashiabor, H. at 79) [74], and one of the prerequisites to its application is conformity with international law (Barde, J.-P. at 23, 28) [72].

In Ethiopia, all international agreements established by the federal government shall protect and ensure Ethiopia's right to sustainable development (FDREC (n19) Art 43 (3)) [35]. Concurrently, all international agreements ratified by the federal government are an integral part of the law of the land, and they are part of the constitutional interpretation clauses (FDREC Art 9 (4), 13 (2), 43 (3), 51 (8), 55 (12)) [35].

Ethiopia is committed to developing a national environmental liability and compensation regime (Rio Declaration Principle 7, 11, 13) [9]. In addition, since Ethiopia has an international commitment to the use of environmental taxes to achieve sustainable waste management, it can use environmental tax to revitalize its global partnership for sustainable development (2030 Agenda for SD Goal 6; Agenda 21 at 2.14 (c), 4.24; Rio Declaration Principle 16) [1,8,9].

8.1.3. International Trade

The federal government of Ethiopia has the duty to enact specific laws that regulate foreign trade and forge and promote mutual interest-based economic union and relations (FDREC Art 51 (4) (8) (12), 55 (2) (b), 86) [35].

To that effect, it has applied to the World Trade Organization (WTO), and its application was received on 13 January 2003 [87]. In line with the Most-Favoured-Nation Treatment Principle [88] and the Chapeau of Article XX [88], General Agreement on Tariffs and Trade (GATT) recognizes the adoption/enforcement by any contracting party of measures necessary to protect human, animal/plant life/health and to conserve exhaustible natural resources (GATT Art XX (b) and (g)) [88].

Thus, the use of environmental taxes to achieve sustainable waste management is congruent with Ethiopia's foreign trade policy and its endeavor to accede to the WTO.

8.2. Source of Solid Waste Management, Sewerage Service and Effluent Charges

To avoid taxation without representation, the legal authority enacting environmental taxes must take a variety of material restrictions into account, including constitutional principles such as the principle of legality in the context of rule of law (Rodi, M.; Ashiabor, H. at 59) [74].

Accordingly, Ethiopia is strongly committed to building a political community based on the rule of law, and its states have the duty to do their best to advance the rule of law (FDREC Preamble and Art 52 (2) (a)) [35]. Moreover, in Ethiopia in general and Addis Ababa in particular, it is established that no public money shall be collected except when authorized by law (AACGRCP Art 52, 58 (1); FGEFAP Art 10 (1); AAFAP Art 10 (1)) [36,89,90].

In addition, since Ethiopia is part of the civil law legal system (Tesfaye, A. at 32, 58) [91], its substantive and procedural laws pertaining to taxation flow from tax proclamations, regulations and directives (Taddese, L. at 356) [73]. Accordingly, its federal and AAA laws have to be published in the Federal Negarit Gazeta (FNGEP Art 2 (1) and 2 (2); HPRERPMCCR Art 58) [92,93] and Addis Negarit Gazeta, respectively; and all persons shall take judicial notice of them (AACGRCP Preamble, Art 61 (7); Fasil, N. at 86; FNGEP Art 2 (3); AAFAR Art 24) [36,82,92,94].

Furthermore, in Ethiopia interpretation of a law by the Federal Supreme Court rendered by the cassation division with not less than five judges shall be binding on federal as well as regional courts at all levels (FCPRAP Art 2 (1); FCP Art 10) [95,96]. Concomitantly, a recent ruling by the Cassation Division of the Federal Supreme Court has indicated that to have a legally binding effect, directives do not have to be published in the Negarit Gazeta, or to be displayed in a specified language [97]. Additionally, in service delivery-based charges, the provisions of a contract lawfully formed between two or more persons shall be binding on the parties as though they were law (CCEEP Art 1675 and 1731 (1)) [98].

Subsequently, in Ethiopia, when environmental tax is incorporated in any of the foregoing sources of law, it is authorized by law and all persons shall take judicial notice of it.

Accordingly, the solid waste management [99,100], sewerage services [101–103] and federal effluent [104,105] charges in the AAA are set up by legislative acts, and everyone is bound to take

judicial notice of them. Thus, their sources are subject to the principle of legality in the context of rule of law and, in turn, there is no ground for environmental taxation without representation.

8.3. Scope of Solid Waste Management, Sewerage Service and Effluent Charges

The scope of environmental tax in a federal system is appropriate when it is as broad as the scope of the waste being addressed and it is consistent with the fiscal needs of the federal and regional waste management organs (see details in Section 6.5). In parallel, this section will assess how appropriate the scope of solid waste management, sewerage service and effluent charges is in the AAA of the Federal Democratic Republic of Ethiopia.

8.3.1. Environmental and Fiscal Federalism in Ethiopia

The term 'federal' comes from the Latin word foedus, meaning 'treaty.' A federation is a dual polity where the distribution of power between the federal and state governments is strictly constitutional (Fasil, N. at 36) [80], and fiscal federalism is a process of redistribution of fiscal decision-making power across multi-leveled governments in an effort to achieve sustainable development (Abu, G. at 1; De Mello, L. R., J. R. at 365) [106,107].

'The Federal Democratic Republic of Ethiopia comprises the federal government and the state members' (FDREC Art 1, 50 (1)) [35]. The federal government of Ethiopia has the mandate to enact specific laws on the utilization and conservation of land and other natural resources, as well as of rivers and lakes crossing the boundaries of the national territorial jurisdiction or linking two/more states (FDREC Art 55 (2) (a)) [35]. Moreover, it shall determine and administer the utilization of the waters/rivers and lakes linking two/more states or crossing its territorial boundaries (FDREC Art 51 (11)) [35]. Simultaneously, all residual powers not expressly given to the federal or concurrent jurisdictions are reserved to the states (FDREC Art 52 (1)) [35]. Additionally, states have the power 'to administer land and other natural resources in accordance with federal laws (Gebregiorgs, M. T. (2016) at 26; FEPOEP Art 15 (2); FDREC Art 52 (2) (d); FPCP Art 6 (4); Alm, J.; Banzhaf, H. S. at 194; Oates, W. E. at 1) [11,15,45,62,107,108].'

Furthermore, in Ethiopia there are federal, state, concurrent and undesignated powers of taxation (FDREC Art 96–99) [35]. Concurrently, the federal government and the states shall share revenue, taking the federal arrangement into account, and they shall respectively bear all financial expenditures necessary to carry out all responsibilities and functions assigned to them by law (FDREC Art 94 (1), 95) [35]. Therefore, the fiscal federalism of Ethiopia has room for the introduction of federal and state revenue-providing instruments that are consistent with their fiscal needs.

8.3.2. Scope of Solid Waste Management and Sewerage Service Charges

In a federal system, if the effects of waste fall within the same jurisdiction as the source, then local governments are probably best situated to address the externality through the institution of an environmental tax-based waste management system (Alm, J.; Banzhaf, H. S. at 196–197) [62].

In Ethiopia all urban administrations are bound to ensure sustainable municipal waste collection, transportation, recycling, treatment and safe disposal through the institution of an environmental tax-based waste management system [11].

Accordingly, the Addis Ababa Cleanliness Administration Agency (AACAA) [99,100,109], the Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) [99,109], and the Addis Ababa Water and Sewerage Authority (AAWSA) [99,101–103,109] are respectively bound to ensure environmental tax-based sustainable solid waste collection, landfill, and sewerage services in the AAA (AAWMCDR Art 25) [99].

The scope of the solid waste, landfill and sewerage service charges of the AAA is as broad as the scope of the municipal waste damage being addressed and the fiscal needs of the AACAA, AASWRDPO and AAWSA respectively. Therefore, it is safe to conclude that the scope of the solid waste management and sewerage service charges of the AAA is appropriate.

8.3.3. Scope of Effluent Charge

In a federal system, if the waste has significant transboundary effects, then the national government is better positioned to address the externality through the institution of an environmental tax-based waste management system (Alm, J.; Banzhaf, H. S. at 196–197) [62].

Accordingly, in Ethiopia, the federal government has the mandate to administer rivers linking two or more states or crossing the territorial jurisdiction of Ethiopia (FDREC Art 51 (11)) [35]. Concurrently, the Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE) is bound to address the externality through the practical implementation of an effluent charge (EFWRMP Art 20 (1) (c), 22) [104].

The scope of the federal effluent charge of Ethiopia is as broad as the scope of the degradation of the water resources being addressed and the fiscal needs of the MWIEE. Thus, it is safe to conclude that the scope of the federal effluent charge of Ethiopia is appropriate.

8.4. Base of Solid Waste Management, Sewerage Service and Effluent Charges

The base of an environmental tax is efficient when it is targeted to the waste or waste generating behavior, which helps to incentivize the full range of waste abatement options and can contribute to specifying an optimal tax rate (see details in Section 6.4). Concurrently, this section will appraise the efficiency of the base of solid waste management, sewerage service and effluent charges in the AAA.

8.4.1. Base of Solid Waste Management Charges

In the AAA, the Addis Ababa Cleanliness Administration Agency (AACAA) and the Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) are bound to ensure environmental tax-based sustainable solid waste management (RDCSSTAACG Art 5 (1)) [100].

On the basis of the Solid Waste Management Proclamation of Ethiopia, 'solid waste is anything that is neither liquid nor gas and is discarded as unwanted (AAWMCDR Art 2 (3); RDCSSTAACG Art 2 (9); SWMP Art 2 (6)) [99,100,110].' Correspondingly, the base of solid waste and landfill charges is efficient when it is targeted to the solid waste (see details in Section 6.4).

In practice, water consumption is taken as the base of solid waste and landfill charges (RDCSSTAACG Art 5 (1)) [100]. Since targeting water consumption as the base of the charges does not increase the market cost of the polluting activity, it does not incentivize a full range of solid waste abatement options (OECD (2011) at 4) [85]. Additionally, it does not help to specify an optimal rate for solid waste and landfill charges that is commensurate with the AACAA and AASWRDPO solid waste collection and landfill services respectively.

As a corollary, taking water consumption as the base of solid waste and landfill charges of the AAA is not at all efficient.

8.4.2. Base of Sewerage Service Charges

Base of Sludge Dislodging Service Charge

At the moment, Addis Ababa Water and Sewerage Authority (AAWSA) is bound to provide a sludge dislodging service through the implementation of a sludge dislodging charge (AAWSSDSRRR Art 6 (1) and (2), Schedule III, No. 1 and 2) [102].

On the basis of the AAWSA Re-establishment Proclamation, 'sludge is the content of any waste water settled in waste water facilities (AAWSARP Art 2 (22)) [101],' and it is targeted as the base of the sludge dislodging charge (AAWSSDSRRR Art 6 (1) and (2), Schedule III, No. 1 and 2) [102].

Targeting the volume of the sludge, the pollutant, as the base of the charge increases the market cost of the polluting activity, which helps to incentivize the full range of sludge abatement options. In addition, it helps to specify an optimal sludge dislodging charge rate that is commensurate with AAWSA and with private sludge dislodging services.

Thus, it is safe to conclude that taking sludge as the base of the sludge dislodging charge of the AAA is efficient.

Base of Sewer Service Charge

At the moment in the AAA, there is 10% sewer service coverage [111–116] and the Addis Ababa Water and Sewerage Authority (AAWSA) is bound to deliver sewer service through the implementation of a sewer service charge (AAWSSDSRRR Schedule I) [101].

In sewerage management, the base of the sewer service charge is efficient when it is targeted to sewage (AAWSARP Art 2 (23)) [101], the pollutant, or to its close proxy. In practice, water consumption in cubic meters, which is a close proxy of sewage, is targeted as the base of the sewer service charge of the AAA (AAWSSDSRRR Schedule I) [102].

Targeting water consumption in cubic meters as the base of the charge increases the market cost of the polluting activity, which by and large helps to incentivize a full range of sewage abatement options. In addition, it helps to specify an optimal sewer service charge rate that is commensurate with AAWSA sewer service.

Therefore, it is safe to conclude that taking water consumption in cubic meters as the base of the sewer service charge of the AAA is by and large efficient.

8.4.3. Base of Effluent Charge

In Ethiopia, the Ministry of Water, Irrigation and Electricity (MWIEE) may issue permits for the release of treated waste into rivers linking two or more states or crossing the territorial jurisdiction of Ethiopia and may collect effluent charges from permit holders (EFWRMP Art 11 (1) (d), 13 (2), 20 (1) (c), 22; EWRMR Art 5, 11, 12, 13, 14, 32) [104,105].

On the basis of the Ethiopian Water Resources Management Proclamation, 'waste means any harmful matter introduced, released or discharged into any water body in any solid, liquid or gaseous form (EFWRMP Art 2 (10)) [104],' and it is targeted as the base of the effluent charge (EWRMR Art 12 (1) (b)) [105].

Targeting the type and volume of waste as the base of the effluent charge helps to incentivize the full range of effluent abatement options (OECD (2011) at 4) [85]. In addition, it helps to specify an optimal effluent charge rate that is commensurate with MWIEE restoration of authorized degradation of rivers linking two or more states or crossing the territorial jurisdiction of Ethiopia.

Therefore, it is safe to conclude that taking the type and volume of treated waste as the base of the federal effluent charge of Ethiopia is efficient.

8.5. Rate of Solid Waste Management, Sewerage Service and Effluent Charges

An unregulated market has room for unabated externalities (Pigou, A. C. at 134; Alm, J.; Banzhaf, H. S. at 179; Ashford, N. A.; Caldart, C. C. at 132; Stewart, R. B. at 172) [5,62,68,84], and grants an implicit subsidy to polluters (Murty, M. N. at 130; Snape, J.; de Souza, J. at 119) [6,10]. Therefore, when a market fails (Markandya, A. et al. at 129; Bhatia, H. L. at 5) [61,78] to appreciate the opportunity costs of environmental use, it causes overuse of the environment and overproduction of ecologically harmful products (Siebert, H. at 17,18) [117].

Meanwhile, environmental tax provides an ideal means of injecting appropriate price signals and creating markets for unpriced resources and environmental services (Pigou, A. C. at 172; Murty, M. N. at 128; Bell, S.; McGillivray, D. at 239; Barde, J-P. at 10; UNEP at 29) [5,6,41,72,77], and its revenue achieves its distributive role when it is used for financing the environmental goal it targets (De Sadeleer, N. at 47, 48) [12].

In addition, the rate of environmental tax is optimal when it is commensurate with the cost of waste management, and it creates an incentive for the realization of sustainable waste management (UNEP at 23; Stewart, R. B. at 175–176) [77,84]. Correspondingly, this section will assess whether the rates of the solid waste management, sewerage service and effluent charges in the AAA are optimal or not.

8.5.1. Rate of Solid Waste Management Charges

On the basis of the Solid Waste Management Proclamation of Ethiopia, 'solid waste management means the collection, transportation, storage, recycling or disposal of solid waste, or the subsequent use of a disposal site that is no longer operational (SWMP Art 2 (7)) [110].' Concurrently, this section is allocated to appraise how optimal the rates of solid waste and landfill charges are in the realization of sustainable solid waste management.

Rate of Solid Waste Collection Service Charge

In the AAA, the Addis Ababa Cleanliness Administration Agency is bound to internalize the social cost of its solid waste collection service and to incentivize sustainable solid waste management through the implementation of a solid waste charge (Gebregiorgs, M. T. (2016) at 35–37; FPCP Art 5 (1); AAWMCDR Art 25 (1) and (2); RDCSSTAACG preamble, Art 3, 5, 6; AAEMSORP Art 53 (6), 55) [11,45,98,99,109,118–123].

Accordingly, on the basis of Regulation 25/2009, the revenue of the solid waste charge shall be used for implementing the following activities (RDCSSTAACG Art 6) [100]:

1. For payment of the sanitary service activity in the city that is ordered by the agency according to its contractual service;
2. To purchase sanitary vehicles, machinery and other items that are necessary for the sanitary service of the city;
3. To fulfill different suitable modern technologies that help to improve the sanitation of the city;
4. To reward and encourage the workers and institutions that make great contributions to the sanitary service of the city; and
5. To undertake research, counseling activities and other related works that could help the sanitation service of the city.

In practice, AACAA is collecting a solid waste charge from households and organizations with their monthly water bill, which is computed on the basis of the following schedule (RDCSSTAACG Art 5 (1), Annex 1; AACAA AR 2015 at 29; AACAA AR 2016 at 14; AACAA AR 2017 at 4, 20) [100,124–126], as show in Table 1.

Table 1. Sanitary Service Tariff that is collected with the Water Bill.

No.	Name of the Customer	The Tariff Rate of Water Sewerage (m^3)	The Previous Tariff Rate of Sanitary Service (%)	The Revised Tariff Rate of Sanitary Service (%)
1	The common public water service	1.75	0	5
2	[Household customers]			
	➢ From 0–7 m^3	1.75	5	20
	➢ From 7–20 m^3	3.15	5	20
	➢ From 20 m^3	3.80	5	20
3	Customers other than household customers	3.80	0	42.5

However, since the rate of the solid waste charge is so nominal [119–123], and there is only a partly effective solid waste charge collection system (Gebregiorgs, M. T. (2018) at 346–352) [119–123,127], AACAA is slightly translating the distributive role of the solid waste charge into action (AACAA AR 2015; AACAA AR 2016 at 14; AACAA AR 2017 at 4, 20 and 36) [119–126].

As a result, the lion's share of the social cost of its solid waste collection service (AACAA AR 2015 at 4, 25; AACAA AR 2016 at 3, 11; AACAA AR 2017 at 3, 19) [124–126] is covered by the subsidy it is allocated from AAA (AACG 2006 E.C. FY BP at Table 2 No. 523; AACG 2007 E.C. FY BP at Table 2 No. 523; AACG 2008 E.C. FY BP at Table 2 No. 523; AACG 2009 E.C. FY BP at Table 2 No. 523) [31–34,119–123].

Rate of Landfill Charge

The landfill charge is a levy on the landfilling of waste, and its goals are to internalize the environmental costs of landfill; to give better price signals for alternatives to landfill; and to assist in meeting waste targets in the most efficient way (Snape, J.; de Souza, J. at 4, 115 and 214) [10].

In the AAA, the Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) is bound to internalize the social cost of its landfill service and to incentivize sustainable solid waste management through the practical implementation of a landfill charge (Gebregiorgs, M. T. (2016) at 35–37; FPCP Art 5 (1); AAWMCDR Art 25 (1) and (2); RDCSSTAACG Art 5 (3) (b); AAEMSORP Art 53 (6), 58) [11,45,99,100,109,123,128,129].

In practice, AASWRDPO is collecting 4 ETB (USD 0.15)/1 m^3 landfill charge in tandem with the solid waste charge of the AACAA (AASWRDPO AR 2015; AASWRDPO AR 2016 at 16; AASWRDPO AR 2017) at 4, 17) [130–132].

Nevertheless, since the rate of the landfill charge is so nominal [123,128,129] and there is only a partly effective landfill charge collection system (Gebregiorgs, M. T. (2018) at 353–355) [119–123,127], AASWRDPO is slightly translating the distributive role of the landfill charge into action [123,128,129]. Consequently, the lion's share of the social cost of its landfill service (AASWRDPO AR 2015, AASWRDPO AR 2016 at 9; AASWRDPO AR 2017 at 4, 15) [130–132] is covered by the subsidy it is allocated from AAA (AACG 2006 E.C. FY BP Table 2 No. 524; AACG 2007 E.C. FY BP Table 2 No. 524; AACG 2008 E.C. FY BP at Table 2 No. 524; AACG 2009 E.C. FY BP at Table 2 No. 524) [31–34,123,128,129].

Simultaneously, since the rates of the solid waste and landfill charges are nominal, they are not creating an incentive for the residents of the AAA to sustainably manage their solid waste. (Bjerkli, C. L. at 1277, 1278) [27,119,120,123,128,129,133].

Therefore, it is safe to conclude that at the moment, the solid waste and landfill charges of the AAA are slightly optimal and they are marginally reinforcing the aspiration of Ethiopia to achieve sanitation for all by 2030.

8.5.2. Rate of Sewerage Service Charges

On the basis of the Addis Ababa Water and Sewerage Authority (AAWSA) Re-establishment Proclamation, 'sewerage service shall mean the collection, treatment and disposal of waste water/sewage' (AAWSARP Art 2 (21)) [101].

In the AAA, the AAWSA is bound to internalize the social cost of its sewerage service, and to incentivize sustainable sewerage management through the practical implementation of sewerage service charges: Sludge dislodging and sewer service charges (Gebregiorgs, M. T. (2016) at 38, 39; FPCP Art 5 (1); AAWMCDR Art 25 (1) and (2); AAWSARP Art 5 (2), 7 (1); 14 (2) and 25; AAWSSDSRRR Preamble, Art 6, 39 and Schedule I and III; AAEMSORP Art 53 (6) and 59) [11,45,98,101,102,109,111,114,134,135]. Concurrently, this section is allocated to appraise how optimal the rates of sludge dislodging, and sewer service charges are in the realization of sustainable sewerage service.

Rate of Sludge Dislodging Charge

The AAWSA has a special mandate that allows it to collect a sludge dislodging charge for its vacuum trucks-based sludge dislodging service (AAWSARP Art 16 (2) (a); AAWSSDSRRR Art 39 (1)) [101,102].

Accordingly, it is collecting a 176 ETB (USD 6.46) sludge dislodging charge per trip from its household customers [111,134–138].

Nevertheless, since the rate of the sludge dislodging charge is so nominal [111,114,134–138], AAWSA is slightly translating the distributive role of its sludge dislodging charge [111,114,134–138].

Rate of Sewer Service Charge

At the moment, in the AAA there is 10% sewer service coverage and the Addis Ababa Water and Sewerage Authority (AAWSA) is bound to deliver sewer service through the implementation

of a sewer service charge (AAWSSDSRRR Schedule I) [102]. Accordingly, in 2010, on the basis of Regulation No. 31/2002, the AAWSA was collecting sewer service charges on the basis of the rates indicated in the following tables (AAWSSDSRRR Art 5, Schedule I) [102].

Table 2. Five Years Tariff for Sewerage Disposal Service of AAWSA.

Block		First Year Tariff 8 July 2002 to 7 July 2003	Second Year Tariff 8 July 2003 to 7 July 2004	Third Year Tariff 8 July 2004 to 7 July 2005	Fourth Year Tariff 8 July 2005 to 7 July 2006	Fifth Year Tariff 8 July 2006 to 7 July 2007
		Tariff/m^3 (in Birr)	Tariff/m^3 (in Birr)	Tariff/m^3 (in Birr)	Tariff/m^3 (in Birr)	Tariff/m^3 (in Birr)
		Sewerage	Sewerage	Sewerage	Sewerage	Sewerage
Public Fountain		-	-	-	-	-
Domestic Customers (Monthly Water Consumption in Cubic Meters)	0–7	-	-		-	-
	Above 7 up to 20	0.35	0.40	0.45	0.50	0.55
	Above 20	0.35	0.40	0.45	0.50	0.55
Non-domestic Consumers		0.35	0.40	0.45	0.50	0.55

Later on, in 2011, with the objective to enhance the internalization of the cost of its water supply and sewerage disposal service, AAA amended Schedule I of Regulation No. 31/2002 without explicitly indicating the rate of the sewer service charge (AAWSSDSRA Preamble) [103].

For that reason, at the moment, it is hardly possible to clearly see whether the rate of the sewer service charge is optimal or not and to trace the specific destination of the revenue it generates.

As a logical extension of the foregoing points, the lion's share of the social cost of the sewer (AAWSA WWTRSP 2015 AR at 1; AAWSA WWTRSP 2016 AR at 101; AAWSA WWTRSP 2017 AR at 72) [28–30], sludge dislodging (AAWSA WWTRSP 2015 AR at 1, 2; AAWSA WWTRSP 2016 AR at 102; AAWSA WWTRSP 2017 AR at 72) [28–30], and waste water treatment and disposal (AAWSA WWTRSP 2015 AR at 1, 2; AAWSA WWTRSP 2016 AR at 101, 102; AAWSA WWTRSP 2017 AR at 72, 73) [28–30] services of the AAWSA is covered by the subsidy it is allocated from AAA (AACG 2006 E.C. FY BP Table 2 No. 221; AACG 2007 E.C. FY BP Table 2 No. 221; AACG 2008 E.C. FY BP at Table 2 No. 221; AACG 2009 E.C. FY BP (n18) at Table 2 No. 221) [31–34,111,114,134–138].

In addition, because the rate of the sewerage service charges is nominal, it is not creating an incentive for the residents of the AAA to sustainably manage their sludge and sewage [111,114,134–140].

Therefore, it is safe to conclude that, at the moment, the sewerage service charge of the AAA is slightly optimal and is marginally reinforcing the aspiration of Ethiopia to achieve sanitation for all by 2030.

8.5.3. Rate of Effluent Charge

In Ethiopia, all water resources are the common property of the Ethiopian people and the state (EWRMP at 1.3 (1); EWSS at No. 3; FDREC Art 40 (3); EFWRMP Art 5) [18,19,35,104], and on the basis of the Ethiopian Water Resources Management Proclamation, 'water resource management means activities that include water resources development, utilization, conservation, protection and control (EFWRMP Art 2 (19)) [104].'

The inbuilt area of Addis Ababa is found in the Akaki river basin; and the absolute majority of industries in it dispose their effluent into the Akaki River, which joins to the trans-regional Awash River, which crosses the Oromia and Somalia National Regional States of Ethiopia (ESIA WWTPSLER KC at 17) [116].

Concurrently, the Ministry of Water, Irrigation and Electricity of Ethiopia is bound to internalize the cost of restoration of authorized degradation of the Akaki River and to incentivize sustainable effluent management through the practical implementation of a federal effluent charge (Gebregiorgs, M. T. (2016) at 38; EFWRMP Art 20 (1) (c) and 22) [11,104,113,141,142].

In practice, since the federal government has not yet developed the rate of its effluent charge [113,141,142], and there is no effluent charge collection system (Gebregiorgs, M. T. (2018) at 367–370) [127], the MWIEE is neither internalizing the social cost of authorized degradation of the Akaki River nor creating an incentive for the industries to sustainably manage their effluent [113,141,142].

As a corollary, at the moment, the absolute majority of the industries are barely using the full range of effluent abatement options, and they are directly disposing their untreated effluent into the Akaki River (ESIA WWTPSLER KC at 17) [21,22,25,113,116,141–151].

Thus, it is safe to conclude that, at the moment, the federal effluent charge of Ethiopia is not at all reinforcing the aspiration of Ethiopia to achieve sustainable water resource management by 2030.

9. Conclusions

The research assesses the viability of the design of the source, base, scope and rate of solid waste, landfill, sewerage service, and effluent charges in the achievement of sustainable waste management in the AAA of Ethiopia. In this research, the source of environmental tax is subject to the principle of legality as long as it is set up by legislative acts; the scope of an environmental tax in a federal system is appropriate when it is as broad as the scope of the waste being addressed, and is consistent with the fiscal needs of the federal and regional waste management organs. The base of an environmental tax is considered to be efficient when it is targeted to the waste or waste-generating behavior, which helps to incentivize the full range of waste abatement options and can contribute to specification of an optimal tax rate. The rate of environmental tax is considered optimal when it is commensurate with the cost of waste management and it creates an incentive for the realization of sustainable waste management. Correspondingly, this research has first indicated Ethiopia's commitment to a federal system, sustainable waste management, the polluter-pays principle and the distributive and incentive roles of environmental taxes. Secondly, it has shown that waste management is one the goals of sustainable development and it is applicable both in developed and least developed countries. Thirdly, it has displayed the mutual contribution of the achievement of waste management to the progress of sustainable sanitation and water resource management. Fourthly, it has shown the distributive and incentive roles of environmental taxes in the achievement of sustainable waste management. Fifthly, it has indicated that cautious design of the source, base, scope and rate of environmental taxes is a critical determinant for environmental taxes' overall success in addressing the prevalent waste mismanagement in Ethiopia.

This research, having the foregoing benchmark findings in its normative framework, has assessed the viability of the design of the source, base, scope and rate of solid waste, landfill, sewerage service and effluent charges in the practical achievement of sustainable waste management in the AAA. Consequently, it has demonstrated that:

(1) The sources of solid waste, landfill, sewerage service and federal effluent charges are set up by legislative acts, and in turn their sources are subject to the principle of legality, and there is no ground for environmental taxation without representation;

(2) The scope of solid waste, landfill, sewerage service and federal effluent charges is as broad as the scope of the waste being addressed, and it is consistent with the fiscal needs of the federal and the Addis Ababa Administration waste management organs, and in turn their scope is appropriate;

(3) Sludge and effluent are targeted as the bases of the sludge dislodging and federal effluent charges, respectively. Therefore, the sludge dislodging and federal effluent charges' bases efficiently target the wastes, which helps to incentivize the full range of sludge and effluent abatement options and can contribute to specification of their optimal rate;

(4) Water consumption, which is a close proxy of sewage, is targeted as the base of the sewer service charge. Thus, the base of the sewer service charge by and large efficiently targets the sewage-generating behavior, which helps to incentivize the full range of sewage abatement options and can contribute to specification of its optimal rate;

(5) Water consumption is taken as the base of solid waste and landfill charges. Therefore, the base of solid waste and landfill charges does not at all efficiently target the waste or waste-generating behavior and thus does not help to incentivize the full range of solid waste abatement options, nor does it contribute to specification of their optimal rate;

(6) The rates of solid waste, landfill and sewerage service charges make only a nominal contribution to the cost of solid waste and sewage management, and they barely create an incentive for the residents of the AAA to sustainably manage their solid waste and sewage, and as such their rates are slightly optimal; and

(7) Because Ethiopia has not yet developed the rate of the federal effluent charge, the federal effluent charge neither internalizes the cost of trans-regional water resource degradation nor incentivizes the polluters to sustainably manage their effluent.

As a corollary, the study has concluded that, having a somewhat viable design, solid waste, landfill and sewerage service charges are marginally reinforcing the aspiration of Ethiopia to achieve sustainable sanitation. Correspondingly, the results imply that the aspiration of Ethiopia to achieve sustainable sanitation and water resource management by 2030 is contingent on the cautious design of its waste management taxes.

Funding: This research was funded by The Netherlands Organisation for International Cooperation in Higher Education (Nuffic) grant number NICHE/ETH/020.

Conflicts of Interest: The authors declare no conflict of interest.

References and Notes

1. 2030 Transforming Our World: The 2030 Agenda for Sustainable Development (2030 Agenda for SD). 2015. Available online: https://www.un.org (accessed on 30 April 2018).
2. Addis Ababa Action Agenda of the Third International Conference on Financing for Development (AA AA TICFD). 2015. Available online: www.un.org (accessed on 23 May 2018).
3. World Health Organization (WHO). Chemicals and Waste Management: Essential to Achieving the Sustainable Development Goals (SDGs). Available online: http://www.who.int/iomc/publications/IOMC_CWMandSDG_brochure_final_01Feb18.pdf (accessed on 1 May 2018).
4. Directive 2008/98/EC on waste (Directive 2008/98/EC). Available online: http://ec.europa.eu/environment/waste/framework/framework_directive.htm (accessed on 27 April 2018).
5. Pigou, A.C. *The Economics of Welfare*, 1st ed.; Palgrave Macmillan: London, UK, 1932; ISBN 978-0230249318.
6. Murty, M.N. Market-based instruments for pollution abatement in India. In *Economics of Environment and Development*, 1st ed.; Kumar, P., Ed.; Ane Books: New Delhi, India, 2005; ISBN 10:8180520838.
7. Joseph, S.-A. Environmental taxes—Definitional analysis: Behavioural change or revenue raising. In *Environmental Taxation and Green Fiscal Reform Theory and Impact*; Kreiser, L., Lee, S., Ueta, K., Milne, J.E., Ashiabor, H., Eds.; Edward Elgar Publishing Limited: Cheltenham, UK, 2014; ISBN 978 1 78347 816 3.
8. UN 'Agenda 21'. 1992. Available online: https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf (accessed on 30 April 2018).
9. UN 'Rio Declaration on Environment and Development'. 1992. Available online: www.un.org/documents/ga/conf151/aconf15126-1annex1.htm (accessed on 30 April 2018).
10. Snape, J.; de Souza, J. *Environmental Taxation Law: Policy, Contexts and Practice*; Ashgate Publishing Limited: Aldershot, UK, 2006; ISBN 0 7546 2304 1.
11. Gebregiorgs, M.T. What are the instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle in Ethiopia? *SAJELP* **2016**, *22*, 3–43.
12. De Sadeleer, N. *Environmental Principles from Political Slogan to Legal Rules*; Oxford University Press: New York, NY, USA, 2002; ISBN 978-0-19-928092-6.
13. Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation (Amendment) (DPDEOFDREA); No. 803/2013, No. 61, 2013.
14. Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation (DPDEOFDRE); No. 691/2010, No. 1, 2010.
15. Federal Environmental Protection Organs Establishment Proclamation (FEPOEP) of Ethiopia; No. 295/2002, No. 7, 2002.
16. Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation of Ethiopia. *Environmental Policy of Ethiopia (EPE)*; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1997.

17. Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation of Ethiopia. *National Conservation Strategy Volume II (NCS II)*; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1996.
18. Ministry of Water Resources. *Ethiopian Water Resources Management Policy (EWRMP)*; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2001.
19. Ministry of Water Resources. *Ethiopian Water Sector Strategy (EWSS)*; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2001.
20. Environmental Protection Authority 'National Report of Ethiopia: UN Conference on Sustainable Development' (Rio+20) (UN CSD Rio+20 NRE). 2012. Available online: https://sustainabledevelopment.un.org/content/documents/973ethiopia.pdf (accessed on 30 April 2018).
21. Ministry of Environment, Forest and Climate Change of Ethiopia. *Assessment on Industrial Pollution and the Environmental, Economic and Social Impact (MEFCCE AIPEESI)*; MEFCCE: Addis Ababa, Ethiopia, 2014.
22. Ministry of Industry of Ethiopia. *Summary of Review Works on Environmental Management Practices of Selected Industries in Ethiopia (MIE SRWEMPSIE)*; Ministry of Industry of Ethiopia: Addis Ababa, Ethiopia 2014.
23. Tsegai, B. Industrial Pollution Control and Management in Ethiopia: A Case Study on Almeda Factory and Sheba Leather Industry in Tigrai National Regional State. Ph.D. Thesis, University of Warwick School of Law, Warwick, UK, 2015. Available online: wrap.warwick.ac.uk/67913/1/WRAP_THESIS_Ghebretekle_2015.pdf (accessed on 29 April 2018).
24. Gebregiorgs, M.T. The role of public interest litigation in the protection of the environment of Ethiopia: The law and the practice. In *Mekelle University Cultural Landscapes of Ethiopia Conference Proceedings (MU CLECP)*; Mekelle University: Mekelle, Ethiopia, 2015.
25. Federal First Instance Court of Ethiopia. *Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia*; Civil File No. 64902; Federal First Instance Court: Addis Ababa, Ethiopia, 28 February 2007.
26. Addis Ababa Cleanliness Administration Agency (AACAA). *Addis Ababa Cleanliness Administration Agency Solid Waste Policy (AACAASWP)*; AACAA: Addis Ababa Ethiopia, 1995.
27. Bjerkli, C.L. Governance on the ground: A study of solid waste management in Addis Ababa, Ethiopia. *IJURR* **2013**, *37*. [CrossRef]
28. Addis Ababa Water and Sewerage Authority. *Waste Water Treatment and Reuse Sub-Process 2015 Annual Report (AAWSA WWTRSP 2015 AR)*; AAWSA: Addis Ababa, Ethiopia, 2015.
29. Addis Ababa Water and Sewerage Authority. *Waste Water Treatment and Reuse Sub-Process 2016 Annual Report (AAWSA WWTRSP 2016 AR)*; AAWSA: Addis Ababa, Ethiopia, 2016.
30. Addis Ababa Water and Sewerage Authority. *Waste Water Treatment and Reuse Sub-Process 2017 Annual Report (AAWSA WWTRSP 2017 AR)*; AAWSA: Addis Ababa, Ethiopia, 2017.
31. Addis Ababa City Government 2006 E.C. Fiscal Year Budget Proclamation (AACG 2006 E.C. FY BP); NO. 31/2013, NO. 39, 2013.
32. Addis Ababa City Government 2007 E.C. Fiscal Year Budget Proclamation (AACG 2007 E.C. FY BP); NO. 41/2014, NO. 41, 2014.
33. Addis Ababa City Government 2008 E.C. Fiscal Year Budget Proclamation (AACG 2008 E.C. FY BP); NO. 44/2015 E.C., NO. 44, 2015.
34. Addis Ababa City Government 2009 E.C. Fiscal Year Budget Proclamation (AACG 2009 E.C. FY BP); NO. 47/2016 G.C., NO. 47, 2016.
35. The Constitution of the Federal Democratic Republic of Ethiopia; Proclamation (FDREC); NO. 1/1995, NO. 1, 1995.
36. Addis Ababa City Government Revised Charter Proclamation (AACGRCP); NO. 361/2003, NO. 86, 2003.
37. Report of the World Commission on Environment and Development (RWCED) 'Our Common Future'. 1987. Available online: www.un-documents.net/our-common-future.pdf (accessed on 30 April 2018).
38. Cullet, P. Environment and development—The missing link. In *International Economic Law, Globalization and Developing Countries*; Faundez, J., Tan, C., Eds.; Edward Elgar: Cheltenham, UK, 2010; ISBN 978 1 84844 113 2.
39. Verschuuren, J. The growing significance of the principle of sustainable development as a legal norm. In *Research Handbook on Fundamental Concepts of Environmental Law*; Fisher, D., Ed.; Edward Elgar Publishing Ltd.: Cheltenham, UK, 2016; ISBN 978 1 78471 464 2.

40. Verschuuren, J. Sustainable development and the nature of environmental legal principles. *PELJ* **2006**, *9*. Available online: https://ssrn.com/abstract=899537 (accessed on 30 May 2018).
41. Bell, S.; McGillivray, D. *Environmental Law*, 7th ed.; Oxford University Press: New York, NY, USA, 2008; ISBN 978-0-19-921102-9.
42. Bosselmann, K. *The Principles of Sustainability: Transforming Law and Governance*; Ashgate Publishing Limited: Hampshire, UK, 2008; ISBN 978-0-7546-7355-2.
43. Ministry of Mines and Energy of Ethiopia. *The National Energy Policy of Ethiopia (NEPE)*; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1993.
44. Federal Environmental Impact Assessment Proclamation (FEIAP) of Ethiopia; No. 299/2002, No. 11, 2002.
45. Federal Pollution Control Proclamation (FPCP) of Ethiopia; No. 300/2002, No. 12, 2002.
46. Federal Standards for Industrial Pollution Control in Ethiopia (FSIPCE); No. 1/2011, No. 1, 2011.
47. Urban Planning Proclamation (UPP) of Ethiopia; No. 574/2008, No. 29, 2008.
48. Access to Genetic Resources and Community Knowledge, and Community Rights Proclamation (AGRCKCRP) of Ethiopia; No. 482/2006, 2006.
49. Fisheries Development and Utilization Proclamation (FDUP) of Ethiopia; No. 315/2003, No. 32, 2003.
50. Code of Practice of the Floriculture Sector Council of Ministers Regulation (CPFSCMR) of Ethiopia; No. 207/2011, No. 74, 2011.
51. Public Health Proclamation (PHP) of Ethiopia; No. 200/2000, No. 33, 2000.
52. National Planning Commission of Ethiopia. *Growth and Transformation Plan II of Ethiopia Volume I: Main Text (GTPE II) (2015/16-2020/21)*; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2016.
53. Finance and Economic Development Bureau of Addis Ababa Administration. *Growth and Transformation Plan II (AAA GTP II) (2015/16-2020/21)*; Addis Ababa Administration: Addis Ababa, Ethiopia, 2016.
54. UN Stockholm Declaration on the Human Environment (UN SDHE). 1972. Available online: www.un-documents.net/aconf48-14r1.pdf (accessed on 30 April 2018).
55. UN 'Framework Convention on Climate Change' (UN FCCC). 1992. Available online: https://unfccc.int/resource/docs/convkp/conveng.pdf (accessed on 1 May 2018).
56. UN 'Convention on Biological Diversity' (UN CBD). 1992. Available online: https://www.cbd.int/doc/legal/cbd-en.pdf (accessed on 1 May 2018).
57. Ethiopia Biological Diversity Convention Ratification Proclamation (EBDCRP) of Ethiopia; No. 98/1994, No. 88, 1994.
58. AU 'African Convention on the Conservation of Nature and Natural Resources'. 1968. Available online: faolex.fao.org/docs/pdf/mul45449.pdf (accessed on 30 April 2018).
59. Shelton, D.; Kiss, A. *Judicial Handbook on Environmental Law*; United Nations Environment Programme: Nairobi, Kenya, 2005; ISBN 92-807-2555-6.
60. Gilpin, A. *Dictionary of Environmental Law*; Edward Elgar Publishing Limited: Cheltenham, UK, 2000; ISBN 1840641886.
61. Markandya, A.; Perelet, R.; Mason, P.; Taylor, T. *Dictionary of Environmental Economics*; Earthscan Publications Ltd.: London, UK, 2002; ISBN 1-85383-529-3.
62. Alm, J.; Banzhaf, H.S. Designing economic instruments for the environment in a decentralized fiscal system. *J. Econ. Survey* **2012**, *26*, 177–202. [CrossRef]
63. Organisation for Economic Co-operation and Development (OECD). *Environmentally Related Taxes in OECD Countries: Issues and Strategies*; OECD Publications Service: Paris, France, 2001; ISBN 92-64-18731-6. Available online: https://www.cbd.int/financial/fiscalenviron/g-fiscaltaxes-oecd.pdf (accessed on 30 May 2018).
64. Addis Ababa City Government Environmental Pollution Control Regulation (AAEPCR); No. 25/2007, No. 56, 2007.
65. Pitrone, F. Environmental Taxation: A Legal Perspective. Ph.D. Thesis, University of Luiss Guido Carli, Roma, Italy, 2014. Available online: eprints.luiss.it/1291/1/20140217-pitrone.pdf (accessed on 30 May 2018).
66. Wolf, S.; Stanley, N. *Environmental Law*, 5th ed.; Routledge: New York, NY, USA, 2011; ISBN 10:0-203-84254-5.
67. Kiss, A.; Shelton, D. *Guide to International Environmental Law*; Martinus Nijhoff: Leiden, The Netherlands, 2007; ISBN 13:978-1-57105-344-2.
68. Ashford, N.A.; Caldart, C.C. *Environmental Law, Policy, and Economics: Reclaiming the Environmental Agenda*; MIT Press: London, UK, 2008; ISBN 978-0-262-01238-6.

69. Pearce, D. The Polluter Pays Principle, Briefing Papers on Key Issues in Environmental Economics. Gatekeeper Series No. LEEC 89-03. 2003. Available online: http://www.mekonginfo.org/assets/midocs/0002714-economy-the-polluter-pays-principle.pdf (accessed on 30 April 2018).
70. The International Bank for Reconstruction and Development (IBRD)/The World Bank (WB) (IBRD/WB). *Environmental Fiscal Reform What Should Be Done and How to Achieve It*; The International Bank for Reconstruction and Development/The World Bank: Washington, DC, USA, 2005. Available online: http://siteresources.worldbank.org/INTRANETENVIRONMENT/Publications/20712869/EnvFiscalReform.pdf (accessed on 31 May 2018).
71. European Commission. *Environmental Taxes: A Statistical Guide*; Publications Office of the European Union: Luxembourg, 2013; ISBN 978-92-79-33230-2. Available online: http://ec.europa.eu/eurostat/documents/3859598/5936129/KS-GQ-13-005-EN.PDF (accessed on 1 June 2018).
72. Barde, J.-P. *Economic Instruments in Environmental Policy: Lessons from the OECD Experience and Their Relevance to Developing Economies*; Working Paper No. 92; OECD: Paris, France, 1994.
73. Taddese, L. The Ethiopian tax system: Excesses and gaps. *Mich. State Int. Law Rev.* **2013**, *20*. Available online: https://digitalcommons.law.msu.edu/ilr/vol20/iss2/9 (accessed on 30 May 2018).
74. Rodi, M.; Ashiabor, H. Legal authority to enact environmental taxes. In *Handbook of Research on Environmental Taxation*; Milne, J.E., Andersen, M.S., Eds.; Edward Elgar Publishing Limited: Cheltenham, UK, 2014; ISBN 978 1 78471 759 9.
75. Vanistendael, F. Legal framework for taxation. In *Tax Law Design and Drafting*; Thuronyi, V., Ed.; International Monetary Fund: Washington, DC, USA, 1996; Volume 2, Available online: www.imf.org/external/pubs/nft/1998/tlaw/eng/ (accessed on 13 June 2016).
76. Gomez-Baggethun, E.; Ruiz-Perez, M. Economic valuation and the commodification of ecosystem services. *Prog. Phys. Geogr.* **2011**, *35*. Available online: http://ppg.sagepub.com/content/35/5/613.refs.html (accessed on 8 June 2016). [CrossRef]
77. United Nations Environment Programme (UNEP). *The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges*, 1st ed.; United Nations Publications; UNEP: Nairobi, Kenya, 2004; ISBN 92-807-2391-X. Available online: https://unep.ch/etu/publications/Economic_Instrument_Opp_Chnall_final.pdf (accessed on 31 May 2018).
78. Bhatia, H.L. *Public Finance*, 19th ed.; Vikas Publishing House PVT Ltd.: New Delhi, India, 1998.
79. Gaines, S.E.; Westin, R.A. *Taxation for Environmental Protection: A Multinational Legal Study*; Greenwood Publishing Group: Westport, CT, USA, 1991; ISBN 0-89930-575-X.
80. Fasil, N. *Constitution for A Nation of Nations: The Ethiopian Prospect*; Red Sea Press: Asmera, Eritrea, 1997; ISBN 1-56902-050-7.
81. Kosonen, K. Regressivity of environmental taxation: Myth or reality? In *Handbook of Research on Environmental Taxation*; Milne, J.E., Andersen, M.S., Eds.; Edward Elgar Publishing Limited: Cheltenham, UK, 2014; ISBN 978 1 78471 759 9.
82. Stewart, R.B. Economic incentives for environmental protection: Opportunities and obstacles. In *Environmental Law, the Economy, and Sustainable Development*; Revesz, R.L., Sands, P., Stewart, R.B., Eds.; Cambridge University Press: Cambridge, UK, 2008; ISBN 0 521 64270 1.
83. Kolstad, C.D. *Environmental Economics*; Oxford University Press: Oxford, UK, 2010; ISBN 9780199732647.
84. Organisation for Economic Co-operation and Development (OECD). *Environmental Taxation, a Guide for Policy Makers*; OECD Publishing: Paris, France, 2011. Available online: https://www.oecd.org/env/tools-evaluation/48164926.pdf (accessed on 31 May 2018).
85. Commission of the European Communities. *Environmental Taxes and Charges in the Single Market*; Office for Official Publications of the European Communities: Luxembourg, 1997; ISBN 92-78-15312-5. Available online: aei.pitt.edu/4785/ (accessed on 30 April 2018).
86. WTO/Accession Status: Ethiopia-World Trade Organization. Available online: https://www.wto.org/english/thewto_e/acc_e/a1_ethiopia_e.htm (accessed on 14 May 2018).
87. The General Agreement on Tariffs and Trade (GATT) Article I. July 1986. Available online: https://www.wto.org/english/docs_e/legal_e/gatt47.pdf (accessed on 20 June 2016).
88. The Federal Government of Ethiopia Financial Administration Proclamation (FGEFAP); No. 648/2009, No. 56, 2009.

89. A Proclamation to Provide for Financial Administration of Addis Ababa City Government (AAFAP); No. 16/2009, No. 1, 2009.
90. Tesfaye, A. *Introduction to Law and the Ethiopian Legal System*; Justice and Legal System Research Institute: Addis Ababa, Ethiopia, 2009. Available online: https://chilot.me/wp-content/uploads/2011/06/introduction-to-law-and-ethiopian-legal-system.pdf (accessed on 30 May 2018).
91. Federal Negarit Gazeta Establishment Proclamation (FNGEP); No. 3/1995, No. 3, 1995.
92. The House of Peoples' Representatives of Ethiopia Rules of Procedures and Members Code of Conduct Regulation (HPRERPMCCR) of Ethiopia; No. 3/2006, No. 3, 2006.
93. Addis Ababa City Government Financial Administration Regulation (AAFAR); No. 39/2011, No. 39, 2011.
94. Federal Courts Proclamation Re-amendment Proclamation (FCPRAP) of Ethiopia; No. 454/2005, No. 42, 2005.
95. Federal Courts Proclamation (FCP) of Ethiopia; No. 25/1996, No. 13, 1996.
96. Federal Supreme Court Cassation Division of Ethiopia. *Revenue and Customs Authority of Ethiopia vs. Mr. Daniel Mekonnen*; Civil File No. 43781; Federal Supreme Court: Addis Ababa, Ethiopia, 21 July 2010.
97. Civil Code of the Empire of Ethiopia Proclamation (CCEEP); No. 165/1960, No. 2, 1960.
98. Waste Management, Collection and Disposal Regulation of the Addis Ababa City Administration Government Regulation (AAWMCDR); No. 13/2004, No. 29, 2004.
99. Regulation to Determine and Collect the Sanitary Service Tariff of the Addis Ababa City Government (RDCSSTAACG); Regulation No. 25/2009, No. 25, 2009.
100. Addis Ababa Water and Sewerage Authority Re-establishment Proclamation (AAWSARP); No. 10/1995, No. 3, 1995.
101. The Addis Ababa Water Supply and Sewerage Disposal Services Regulations No. 5/1995 (Repealing) Regulations (AAWSSDSRRR); No. 31/2002, No. 1, 2002.
102. Addis Ababa Water Supply and Sewerage Disposal Service Regulations (AAWSSDSRA); No. 31/2003 Amendment Regulation No. 35/2011, No. 35, 2011.
103. Ethiopian Federal Water Resources Management Proclamation (EFWRMP); No. 197/2000, No. 25, 2000.
104. Ethiopian Water Resources Management Regulation (EWRMR); No. 115/2005, No. 27, 2005.
105. Abu, G. An economic analysis of fiscal federalism in Ethiopia. In Proceedings of the International Conference on Development Studies in Ethiopia, Addis Ababa, Ethiopia, 11–12 July 2003. Available online: http://scholarworks.wmich.edu/africancenter_icad_archive/60 (accessed on 13 June 2016).
106. De Mello, L.R., Jr. Fiscal decentralization and intergovernmental fiscal relations: A cross-country analysis. *World Dev.* **2000**, *28*. Available online: http://biblioteca.unmsm.edu.pe/redlieds/recursos/archivos/gestionestado/de%20mello.pdf (accessed on 30 May 2018). [CrossRef]
107. Oates, W.E. A reconsideration of environmental federalism. In *Recent Advances in Environmental Economics*; List, J.A., de Zeeuw, A., Eds.; Edward Elgar: Cheltenham, UK, 2002; ISBN 978-1843760023.
108. Federal High Court of Ethiopia. *Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia*; Civil File No. 62904; Federal High Court: Addis Ababa, Ethiopia, 12 June 2008.
109. The Addis Ababa City Government Executive and Municipal Service Organs Re-establishment Proclamation (AAEMSORP); No. 35/2012, No. 35, 2012.
110. Solid Waste Management Proclamation (SWMP) of Ethiopia; No. 513/2007, No. 13, 2007.
111. Gemal Rashid, Deputy General Manager Sewerage Disposal, Treatment and Reuse Core Process, Addis Ababa Water and Sewerage Authority. Interview by the author in person. Addis Ababa, Ethiopia, 2 April 2014. Transcript is available from the author.
112. Tesfaye Werede, Supervisor of Sewerage System, Addis Ababa Water and Sewerage Authority. Interview by the author in person. Addis Ababa, Ethiopia, 3 April 2014. Transcript is available from the author.
113. Tesfaw Ashagrie, Water Supply and Sanitation Directorate: Environmental Specialist and Team Leader, Ministry of Water, Irrigation and Electricity of Ethiopia. Interview by the author in person. Addis Ababa, Ethiopia, 19 June 2014. Transcript is available from the author.
114. Effluent Tax Focus Group Discussion (Effluent Tax FGD). The FGD was conducted by the author in person. Addis Ababa, Ethiopia, 28 June 2014. Transcript is available from the author.

115. Zelalem Ketema, Sewer System Monitoring Case Manager, Addis Ababa Water and Sewerage Authority. Interview by the author in person. Addis Ababa, Ethiopia, 4 January 2016. Transcript is available from the author.
116. Addis Ababa Water and Sewerage Authority. *Environmental and Social Impact Assessment of Waste Water Treatment Plant and Sewer Line Expansion and Rehabilitation in the Kaliti Catchment (ESIA WWTPSLER KC)*; Addis Ababa Environmental Protection Authority: Addis Ababa, Ethiopia, 2014.
117. Siebert, H. *Economics of the Environment Theory and Policy*, 7th ed.; Springer: New York, NY, USA, 2008; ISBN 978-3-540-73706-3.
118. Addis Ababa Cleanliness Administration Agency. *Addis Ababa Cleanliness Administration Agency Sanitation Service Delivery Standard (AACAA SSDS)*; AACAA: Addis Ababa, Ethiopia, 2014.
119. Dawit Ayele, General Manager, Addis Ababa Cleanliness Administration Agency. Interview by the author in person. Addis Ababa, Ethiopia, 1 July 2014. Transcript is available from the author.
120. Tadele Demeko, Deputy General Manager, Addis Ababa Cleanliness Administration Agency. Interview by the author in person. Addis Ababa, Ethiopia, 9 May 2014 and 7 October 2015. Transcript is available from the author.
121. Hamere Kebede, Budget and Plan Process Owner, Addis Ababa Cleanliness Administration Agency. Interview by the author in person. Addis Ababa, Ethiopia, 21 June 2014 and 5 October 2015. Transcript is available from the author.
122. Seifu Nasir, Research, Awareness, Contract and Legal Administrator, Addis Ababa Cleanliness Administration Agency. Interview by the author in person. Addis Ababa, Ethiopia, 8 April 2014 and 5 October 2015. Transcript is available from the author.
123. Solid Waste Tax Focus Group Discussion (Solid Waste Tax FGD). It is conducted by the author in person. Addis Ababa, Ethiopia, 21 June 2014. Transcript is available from the author.
124. *Addis Ababa Cleanliness Administration Agency Annual Report of 2015 (AACAA AR 2015)*; AACAA: Addis Ababa, Ethiopia, 2015.
125. *Addis Ababa Cleanliness Administration Agency Annual Report of 2016 (AACAA AR 2016)*; AACAA: Addis Ababa, Ethiopia, 2016.
126. *Addis Ababa Cleanliness Administration Agency Annual Report of 2017 (AACAA AR 2017)*; AACAA: Addis Ababa, Ethiopia, 2017.
127. Gebregiorgs, M.T. Introducing an administratively feasible environmental tax system in Ethiopia. *JELL* **2018**, *33*, 327.
128. Nega Fantahun (General Manager, Addis Ababa Recycling and Disposal Project Office) in Solid Waste Tax Focus Group Discussion (Solid Waste Tax FGD). Solid Waste Tax FGD is conducted by the author in person. Addis Ababa, Ethiopia, 21 June 2014. Transcript is available from the author.
129. Alemayehu Neme, Deputy General Manager, City Administration of Addis Ababa Solid Waste Recycling and Disposal Project Office. Interview by the author in person. Addis Ababa, Ethiopia, 16 April 2014 and 7 October 2015. Transcript is available from the author.
130. *Addis Ababa Solid Waste Re-use and Disposal Project Office Annual Report of 2015 (AASWRDPO AR 2015)*; AASWRDPO: Addis Ababa, Ethiopia, 2015.
131. *Addis Ababa Solid Waste Re-use and Disposal Project Office Annual Report of 2016 (AASWRDPO AR 2016)*; AASWRDPO: Addis Ababa, Ethiopia, 2016.
132. *Addis Ababa Solid Waste Re-use and Disposal Project Office Annual Report of 2017 (AASWRDPO AR 2017)*; AASWRDPO: Addis Ababa, Ethiopia, 2017.
133. Researcher's Video Record-based Observation of Repi Landfill (RVRBO RLF) (Addis Ababa, Ethiopia, 16 April 2014).
134. Nega Getahun, Legal and Insurance Director, Addis Ababa Water and Sewerage Authority. Interview by the author in person. Addis Ababa, Ethiopia, 25 March 2014. Transcript is available from the author.
135. Gemila Mohammed, Waste Water Treatment and Re-use Process Owner, Addis Ababa Water and Sewerage Authority. Interview by the author in person. Addis Ababa, Ethiopia, 4 January 2016. Transcript is available from the author.
136. Nuri Muhammed, Waste Water Treatment Case Manager, Addis Ababa Water and Sewerage Authority. Interview by the author in person. Addis Ababa, Ethiopia, 3 April 2014 and 25 December 2015. Transcript is available from the author.

137. Tadese Eshete, Kaliti Waste Water Treatment Plant Supervisor, Addis Ababa Water and Sewerage Authority. Interview by the author in person. Addis Ababa, Ethiopia, 28 March 2014. Transcript is available from the author.
138. Solomon Tafese, Addis Ababa Akaki-Kaliti Sub-City Water and Sewerage Manager, Addis Ababa Water and Sewerage Authority. Interview by the author in person. Addis Ababa, Ethiopia, 17 June 2014). Transcript is available from the author.
139. Researcher's Video Record-based Observation of Kaliti Waste Water Treatment Plant (RVRBO Kaliti WWTP) (Addis Ababa, Ethiopia, 28 March 2014).
140. Researcher's Video Record-based Observation of Kotebe Waste Water Treatment Plant (RVRBO Kotebe WWTP) (Addis Ababa, Ethiopia, 25 December 2015).
141. Kifle Alemayehu, Director of Water Utilization, Permit and Administration Directorate, Ministry of Water, Energy and Irrigation of Ethiopia. Interview by the author in person. Addis Ababa, Ethiopia, 3 July 2014. Transcript is available from the author.
142. Zewdu Tefera, Legal Affairs Directorate Director, Ministry of Water, Energy and Irrigation of Ethiopia. Interview by the author in person. Addis Ababa, Ethiopia, 2 April 2014. Transcript is available from the author.
143. Mehari Wendmagegn, Compliance Monitoring and Evaluation Directorate Director, Ministry of Environment, Forest and Climate Change of Ethiopia. Interview by the author in person. Addis Ababa, Ethiopia, 10 April 2014. Transcript is available from the author.
144. Haileslassie Sebhatu, General Manager, Addis Ababa City Government Environmental Protection Authority. Interview by the author in person. Addis Ababa, Ethiopia, 27 March 2014. Transcript is available from the author.
145. Adugna Mekonnen, Deputy Manager, Addis Ababa City Government Environmental Protection Authority. Interview by the author in person. Addis Ababa, Ethiopia, 1 April 2014. Transcript is available from the author.
146. Meseret Mengiste, Environmental Awareness and Pollution Inspection Team Leader, Addis Ababa City Government Environmental Protection Authority. Interview by the author in person. Addis Ababa, Ethiopia, 7 April 2014. Transcript is available from the author.
147. Shimelis Eshetu, Environmental Awareness and Pollution Inspection Officer, Addis Ababa City Government Environmental Protection Authority. Interview by the author in person. Addis Ababa, Ethiopia, 7 April 2014. Transcript is available from the author.
148. Adugna Mengste, Environmental Safeguards Team Leader, Ministry of Industry of Ethiopia. Interview by the author in person. Addis Ababa, Ethiopia, 7 July 2014. Transcript is available from the author.
149. Researcher's Video Record-based Observation of Akaki River (RVRBO AR) (Addis Ababa, Ethiopia, 17 June 2014).
150. Federal Supreme Court Cassation Division of Ethiopia. *Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia*; Civil File No. 51052; Federal Supreme Court: Addis Ababa, Ethiopia, 3 December 2008.
151. Federal Environmental Protection Authority of Ethiopia (FEPAE). *Survey on Environmental Pollution Impact on Akaki and Mojo Rivers*; FEPAE: Addis Ababa, Ethiopia, 2006.

sustainability

IMPACT FACTOR 2.075

CERTIFICATE of PUBLICATION

Certificate of publication for the article titled:

Towards Sustainable Waste Management through Cautious Design of Environmental Taxes: The Case of Ethiopia

Authored by:

Merhatbeb Teklemedhn Gebregiorgs

Published in:

Sustainability 2018, Volume 10, Issue 9, 3088

MDPI Academic Open Access Publishing since 1996

Chapter Four:

Introducing an Administratively Feasible Environmental Tax System in Ethiopia

M.T. GEBREGIORGS[*†]

Introducing an Administratively Feasible Environmental Tax System in Ethiopia

* Ph.D. researcher in Tilburg School of Law, the Netherlands, and Assistant Professor in Mekelle University School of Law, Addis Ababa, Ethiopia. Contact information: M.T.Gebregiorgs@tilburguniversity.edu.

† This research was conducted under the supervision of Professor Dr. Jonathan Verschuuren (TSL, Tilburg University). It was financed by the Netherlands Organisation for International Cooperation in Higher Education (Nuffic), under grant no. NICHE/ETH/020.

ABSTRACT

This Article examines the administrative feasibility of introducing an environmental tax system in the Addis Ababa City Administration (AAA) of Ethiopia. Research supports four findings regarding the difficulty of introducing such a system. First, waste collection, sludge

dislodging services, and sewer services in Ethiopia are lacking. Second, while there is a somewhat effective tax collection system for solid waste, landfill, and sludge taxes, there is not an effective tax collection system for sewer, effluent, and emission taxes. Third, municipal and hazardous solid waste, sludge cake, industrial effluent treatment, and disposal systems are less environmentally friendly than sewer and sludge-based waste water treatment and disposal systems. Lastly, while there is an operating permit system for sewer use and overt hazardous solid waste transportation and disposal, there is no active permit system for covert hazardous solid waste, effluents, and emissions. Based on these findings, it is concluded that solid waste, landfill, sludge, and sewer taxes are somewhat administratively feasible to implement in Ethiopia, but effluent and emission taxes are not.

INTRODUCTION

The polluter-pays principle relies on national institutions that are entrusted with environmental protection[1] to manage[2] environmental[3] taxes.[4] Environmental taxes are not as expensive to administer and implement as a command and control regime, which limits the amount of residuals that each actor generates.[5] The use of environmental taxes can be "described as an evolution in

1 U.N. Conference on the Human Environment, *Declaration of the U.N. Conference on the Human Environment*, ¶¶ 13–17, U.N. Doc. A/CONF.48/14/Rev.1 (June 16, 1972).

2 M.T. Gebregiorgs, *What are the Instrumental Roles of the Introduction of Environmental Tax in the Realisation of the Polluter-Pays Principle under the Federal Jurisdiction of Ethiopia*, SOUTH AFRICA J. ENVTL. L & POL'Y 22 (2016).

3 U.N. Conference on Environment and Development, *Rio Declaration on Environment and Development*, ¶ 16, U.N. A/CONF.151/26/Rev.1 (vol. I), annex I (Aug. 12, 1992) [hereinafter *Rio Declaration*].

4 *See, e.g.*, M.N. Murty, *Market Based Instruments for Pollution Abatement in India*, *in* ECONOMICS OF ENVIRONMENT AND DEVELOPMENT 129 (Pushpam Kumar ed., 2005); SUSAN WOLF & NEIL STANLEY, WOLF AND STANLEY ON ENVIRONMENTAL LAW 24457 (6th ed. 2014); EUROPEAN ENVTL. AGENCY, ENVIRONMENTAL TAXES: IMPLEMENTATION AND ENVIRONMENTAL EFFECTIVENESS 17 (David Gee ed., 1996); Andrew Jordan, Rüdiger K.W. Wurzel & Anthony R. Zito, *'New' Instruments of Environmental Governance: Patterns and Pathways of Change*, 12 ENVTL. POL. 3, 13 (2003).

5 *See* Jordan et al., *supra* note 4, at 4; Nathalie Chalifour, Maria Amparo Grau-Ruiz & Edoardo Traversa, *Multilevel Governance: The Implications of Legal Competences to Collect, Administer and Regulate Environmental Tax Instruments*, *in* HANDBOOK OF RESEARCH ON ENVIRONMENTAL TAXATION 249, 253 (Janet E. Milne & Mikael Skou Anderson eds., 2012).

environmental management,"[6] and its operation relies on an effective fiscal administration.[7] Thus, its design "should be simple, both to administer and to comply with," and it must be administratively feasible.[8]

Simply put, environmental taxes are just like other taxes, and their administration should be carried out by the tax authorities according to standard tax procedure. In practice, their administration may not be possible without a certain know-how possessed only by environmental authorities. Accordingly, environmental taxes should function as part of the tax system by environmental authorities and tax authorities working closely together towards a common goal.[9] However, problems arise when different levels of government are responsible for designing and applying tax expenditures. Hence, distributing power to different levels of government will only work if there is loyal cooperation and mutual trust.[10]

Regardless of how power is distributed, problems of implementation can arise. These problems are due to administrative complexity, inconsistencies within the existing legal framework, and design flaws involving a "mismatch between the type of instrument chosen and the nature of the problem targeted."[11] The fact that environmental policies usually originate and elaborate in different settings means that designs and assessments are inundated with contradictions and duplications. So, when interventions are required to fix these problems, there must be cooperation and coordination

---

6 JEAN-PHILIPPE BARDE, OECD DEVELOPMENT CENTRE, ECONOMIC INSTRUMENTS IN ENVIRONMENTAL POLICY: LESSONS FROM THE OECD EXPERIENCE AND THEIR RELEVANCE TO DEVELOPING ECONOMIES 3 (Doc. OCDE/GD(93)193, 1994), http://www.oecd-ilibrary.org/docserver/download/754416133402.pdf?expires=1519155351&id=id&accname=guest&checksum=F3A881E066FC329520E0626AB86582C6.

7 James Alm & H. Spencer Banzhaf, *Designing Economic Instruments for the Environment in a Decentralized Fiscal System*, 26 J. ECON. SURVS. 177, 188 (2012).

8 *Id.* at 187–88.

9 Chalifour et al., *supra* note 5, at 271.

10 Pedro M. Herrera Molina, *Design Options and Their Rationales*, *in* HANDBOOK OF RESEARCH ON ENVIRONMENTAL TAXATION 85, 98–99 (Janet E. Milne & Mikael Skou Anderson eds., 2012); interview with Tsegai Brhane, Ph.D. in Envtl. Law, Mekelle U. Sch. of Law of Eth. in Mekelle, Eth. (June 10, 2014); interview with Mekete Bekelle, Assistant Professor in Envtl. Law, Addis Ababa U. Sch. of Law of Eth. in Addis Ababa, Eth. (Apr. 17, 2014); interview with Taddese Lencho, PhD in Tax Law, Addis Ababa U. Sch. of Law of Eth. in Addis Ababa, Eth. (Apr. 12, 2014).

11 David O'Connor, *Applying Economic Instruments in Developing Countries: From Theory to Implementation*, 4 ENV'T & DEV. ECON. 91, 92 (1998).

from all parties.[12] However, since "institutions form and adapt slowly, in the process of investing in certain norms, values, and cultures,"[13] the phased implementation of environmental tax should offer institutions a grace period for learning and adjusting to the new rules.[14]

Lastly, from the outset, environmental tax "must be backed up by governmental monitoring and enforcement."[15] Ethiopia is committed to developing a national environmental liability and compensation regime.[16] Ethiopia also introduces incentives and disincentives to discourage practices that hamper the sustainable use of natural resources and the prevention of environmental degradation and pollution.[17]

According to early research, Ethiopia has given recognition to the distributive and incentive roles of environmental tax.[18] Additionally, the legal viability of introducing new environmental taxes are contingent on the gradual phasing in and restructuring of existing environmental taxes.[19]

In Ethiopia, both the federal and state government have the duty to enforce and respect the right to live in a clean and healthy environment.[20] Due to these responsibilities, all city governments in Ethiopia have a duty to introduce a sanitary service provision tax[21]

---

12 Chalifour et al., *supra* note 5, at 263–64.

13 Jordan et al., *supra* note 4, at 20.

14 O'Connor, *supra* note 11, at 92–107.

15 Alm & Banzhaf, *supra* note 7, at 192; *see also* BARDE, *supra* note 6, at 51.

16 *See Rio Declaration*, *supra* note 3, ¶¶ 7–13.

17 Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia (Amendment). Article 4(33)(1)(k), Proclamation No. 803/2013, Negarit Gazetta, Year 19, No. 61. [hereinafter DPDEOFDREA]; Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia. Proclamation No. 691/2010, Negarit Gazetta, Year 17, No. 1 [hereinafter DPDEOFDRE]; Federal Environmental Protection Organs Establishment Proclamation. Article 6(12), Proclamation No. 295/2002, Year 9, No. 7 [hereinafter FEPOEP]; *see also* FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA, ETHIOPIA'S CLIMATE-RESILIENT GREEN ECONOMY: GREEN ECONOMY STRATEGY 198 (2014).

18 Gebregiorgs, *supra* note 2, at 14–15, 18–24.

19 M.T. Gebregiorgs, *How Legally Viable is the Introduction of Environmental Tax in the Implementation of the Polluter-Pays Principle under the Federal Jurisdiction of Ethiopia*, L. ENV'T & DEV. 41 (2018) (unpublished manuscript, on file with author).

20 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, arts. 13 § 1, 92 § 1–4.

21 *Id.* at art. 100(2); Addis Ababa City Government Financial Administration Regulation. Article 2(6), Proclamation No. 39/2011, Addis Negarit Gazetta, Year 3, No.

and ensure integrated municipal waste management.[22] They also have to provide public goods that the private sector will not, or cannot, provide.[23] Simultaneously, city governments shall collect money from its citizens only when authorized by law.[24]

City governments must establish an environmental agency[25] and, where possible, should design its tax structure to provide incentives for environmentally desirable activities and disincentives for actions that damage the environment.[26] The benefits of agency intervention should equal or outweigh the costs of the agencies planning, monitoring, and enforcement of its policies.[27] However, currently, rather than encouraging environmental conservation, the design of the

33 (*see* the definition of Fees and Charges); *see also* A Regulation of Revenue Authority of Addis Ababa City Administration. Article 2(5), Proclamation No. 17/2009, Addis Negarit Gazetta, Year 1, No. 17 [hereinafter AARAR]; A Proclamation to Provide for Financial Administration of Addis Ababa City Government. Article 17, Proclamation No. 16/2009, Addis Negarit Gazetta, Year 2, No. 1 [hereinafter AAFAP]; The Federal Government of Ethiopia Financial Administration Proclamation. Article 17, Proclamation No. 648/2009, Negarit Gazetta, Year 15, No. 56 [hereinafter FGEFAP].

22 City governments in Ethiopia are bound to internalize their social cost in the provision of municipal waste management by and through the implementing environmental taxes. Federal Pollution Control Proclamation, Article 5(1), Proclamation No. 300/2002, Negarit Gazetta, Year 9, No. 12 [hereinafter FPCP]; ENVIRONMENTAL POLICY OF ETHIOPIA § 3.7(c) (1997) [hereinafter EPE]; Addis Ababa City Government Revised Charter Proclamation. Article 2(4) Proclamation No. 361/2003, Addis Negarit Gazetta, Year 9, No. 86 [hereinafter AACGRCP] (*see* the definition of "Municipal Service"); Waste Management, Collection and Disposal Regulation of the Addis Ababa City Administration Government Regulation. Article 2(2), Proclamation No. 13/2004, Addis Negarit Gazetta, Year 2, No. 29 [hereinafter AAWMCDR] (*see* the definition of "Sanitary Service"); *see also* Solid Waste Management Proclamation. Article 4, Proclamation No. 513/2007, Negarit Gazetta, Year 13, no. 13 [hereinafter SWMP].

23 MINISTRY OF NATURAL RESOURCES DEVELOPMENT AND ENVIRONMENTAL PROTECTION, NATIONAL POLICY ON NATURAL RESOURCES AND THE ENVIRONMENT: NATIONAL CONSERVATION STRATEGY VOLUME II, §§ 1.5, 3.6.2 (1994) [hereinafter NCS II].

24 FGEFAP, *supra* note 21, at art. 10(1); AAFAP, *supra* note 21, at art. 10(1); AACGRCP, *supra* note 22, at arts. 52, 58(1).

25 FEPOEP, *supra* note 17, at art. 14.

26 NCS II, *supra* note 23, § 3.6.2; FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA: MINISTRY OF WATER RESOURCES ETHIOPIAN WATER SECTOR STRATEGY 5 (2001) [hereinafter EWSS]; FEDERAL ENVIRONMENTAL PROTECTION AUTHORITY OF ETHIOPIA BALANCED SCORECARD § 2.1 (2012-2016) [hereinafter FEPAE BSC]; MINISTRY OF FINANCE AND ECONOMIC DEVELOPMENT OF ETHIOPIA, BALANCED SCORECARD 13, 33 and 39 (2011-2015) [hereinafter MFEDE BSC]; *see also* FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA: MINISTRY OF WATER RESOURCES, ETHIOPIAN WATER RESOURCES MANAGEMENT POLICY, (2001) §§ 1.3(3), 2.2.5(B)(1)–(2) (2001) [hereinafter EWRMP]; *see also* REVENUE AND CUSTOMS AUTHORITY OF ETHIOPIA, BALANCED SCORECARD 10 (2011-2015) [hereinafter RCAE BSC].

27 NCS II, *supra* note 23.

Ethiopian tax system seems to fulfil a singular purpose: raising revenues.[28] While the Ethiopian Revenues and Customs Authority (ERCA) is by no means the sole player in tax administration, recent tax administration reform has concentrated the power of taxation within that entity.[29]

Because there are many government bodies involved in tax administration in Ethiopia, there are concerns of disorganization and conflicts of jurisdiction.[30] The pollution control system is suffering from a lack of coherence, consistency, and coordination.[31] There are conflicts of interest and duplications of effort in the environmental standard formulation, Environmental Impact Assessment (EIA) review, and the permit and monitoring system.[32] Ethiopia has serious deficiencies in sanitation, landfill, sewage infrastructures, and its rivers are serving as open sewers for untreated industrial waste.[33] The

---

28 Taddese Lencho, *The Ethiopian Tax System: Excesses and Gaps*, 20 MICH. ST. INT'L L. REV. 327, 328 (2013)*;* interview with Tsegai Brhane, *supra* note 10; interview with Belete Ahmed, Research, Drafting & Training Team Leader & Deputy Pub. Prosecutor, Revenue & Customs Auth. of Eth., Addis Ababa, Eth. (May 3, 2014); interview with Yirgalem Eshetu, Core Process Owner, Pol'y Study & Population Affairs Core Process, Addis Ababa Bureau of Finance and Econ. Dev., Addis Ababa, Eth. (Oct. 6, 2015); interview with Atkilt Gebrezgabiher, Addis Ababa Revenues & Customs Branches' Support & Follow-up Directorate, Director, Addis Ababa, Eth. (Oct. 6, 2015).

29 Taddese Lencho, *supra* note 28, at 351.

30 *Id.* at 352.

31 Tsegai Brhane, Industrial Pollution Control and Management in Ethiopia: A Case Study on Almeda Factory and Sheba Leather Industry in Tigrai National Regional State (Feb. 25, 2015) (unpublished Ph.D. dissertation, University of Warwick) (on file with University of Warwick Publications Service).

32 Interview with Tesfaye Yakob, Env't, Health & Safety Standard Dev. Team Leader, Ethiopian Standards Agency, Addis Ababa, Eth. (June 30, 2014); interview with Mehari Wendmagegn, Compliance Monitoring & Evaluation Directorate Director, Ministry of Env't, Forest & Climate Change of Eth., Addis Ababa, Eth. (Apr. 10, 2014); M.T. Gebregiorgs, Administrative Powers of the Federal Environmental Protection Authority of Ethiopia in the Protection of the Environment: The Law and the Practice (2010) (unpublished M.A. thesis, University of Addis Ababa) (on file with author).

33 Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No. 64902, Federal First Instance Court, Feb. 21, 1999); EPE, *supra* note 22, § 1.2; U.N. Conference on Sustainable Development, *National Report of Ethiopia*, 64 (2012) [hereinafter Rio+20]; MINISTRY OF ENV'T, FOREST AND CLIMATE CHANGE OF ETHIOPIA: ASSESSMENT ON INDUSTRIAL POLLUTION AND THEIR ENVIRONMENTAL, ECONOMIC AND SOCIAL IMPACT (2014) [hereinafter MEFCCE AIPEESI]; ENVTL. DEV. ACTION-ETH., SOCIAL IMPACT ASSESSMENT OF KOSHE DUMP SITE CLOSURE AND RECLAMATION PROJECT 4 (2012) [hereinafter SIAKDSCRP]; BELES ENGINEERING P.L.C., ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF WASTE WATER TREATMENT PLANT AND SEWER LINE EXPANSION AND REHABILITATION IN THE KALITI CATCHMENT xii (2013) [hereinafter

inadequacy of public-private partnerships (PPPs) impedes the progress of waste management.[34] These realities show that Ethiopia as a whole, and the AAA in particular, can only do so much in administering taxes that help protect the environment.

This research assesses a topic for which there is scarce literature, addressing the principles involved in matching environmental problems with levels of government and their tax regimes.[35] In addition, the unique governmental and environmental circumstances within Ethiopia must be understood prior to designing and applying any environmental tax.[36] Such an understanding will facilitate the design and administration of feasible environmental taxes. This article seeks to fill the lack of empirical research on environmental tax within Ethiopia and further the understanding needed for the implementation of an effective environmental tax policy there.

The research in this Article shows that introducing an environmental tax is administratively feasible when five critical conditions exist. The first is conformity between state and federal environmental policy and tax policy on environmental standards, EIAs, permits, regulations, municipal waste management, and tax mandates. The second condition is that environmental governance must accommodate PPPs. The third condition is that federal and state governments must empower solid waste, landfill, sludge, sewer, effluent, and emission tax collection systems. The fourth is the existence of effective and environmentally friendly treatment and disposal for municipal and hazardous solid waste, sludge cake, industrial effluent, as well as sewer and sludge-based waste. And lastly, the fifth condition is the existence of a permit system for hazardous solid waste transportation and disposal, sewer use, effluent disposal, and emission release.

This Article is organized into six major parts. Part I identifies all federal, and Addis Ababa Administration (AAA) agencies at play in

---

ESIA WWTPSLER KC]; AGENCE FRANCAISE DE DEVELOPPEMENT & ADDIS ABABA CITY GOVT., SOLID WASTE MANAGEMENT STRATEGY AND INSTITUTIONAL REPORT 1 (2013) [hereinafter AFDD/AACG SWMSIR]; M.T. Gebregiorgs, *The Role of Public Interest Litigation in the Protection of the Environment of Ethiopia: The Law and the Practice*, Mekelle University Cultural Landscapes of Ethiopia Conference Proceedings (2015); Tsegai Brhane, *supra* note 31 (unpublished Ph.D. dissertation).

34 Camilla Louise Bjerkli, *Governance on the Ground: A Study of Solid Waste Management in Addis Ababa, Ethiopia*, 37 INT'L J. URB. REG'L RES. 1273 (2013); AFDD/AACG SWMSIR, *supra* note 33, at 12.

35 Chalifour et al., *supra* note 5, at 250.

36 *Economic Instruments*, *supra* note 17, at 12.

the environmental protection, waste management and taxation sector in the AAA. This part also explores existing possible areas for government agencies to engage in PPPs to provide for more environmentally proactive and administratively efficient infrastructure projects. Next, Part II describes existing public and PPP organizations for municipal and hazardous solid waste collection, transport, and fee arrangements in Addis Ababa. The part then identifies challenges with tax collection systems that are preventing effective administration of solid waste programs. Part III explores existing challenges to the current operation of the Repi Landfill in Addis Ababa. The section also identifies the opportunity to limit environmental pollution through the installation of bio-gas capture and energy technology to reduce landfill emissions and its eventual, planned closure. Then, Part IV reports on sewage sludge, sewer, and sludge cake management organizations in Addis Ababa. Here, too, there is an opportunity for the AAA to enhance revenue and investment strategies to provide for improved environmental service coverage to citizens, and for improved environmental practices in the collection, transport, treatment or disposal of waste. In Part V, issues and potential solutions to enhancing environmentally friendly industrial effluent treatment and disposal program, effectuated by the AAA are discussed. Finally, Part VI briefly reports on the current challenges facing the administrative feasibility of designing and implementing a GHG emissions tax program in the AAA's jurisdiction.

I
ENVIRONMENTAL REGULATORY ENFORCEMENT AND TAX ADMINISTRATION AUTHORITIES

A. Environmental Management and Taxation Overview

In Ethiopia, natural resource and environmental management activities are required to be integrated laterally across all sectors and vertically among all levels of government organizations.[37] Ethiopia is committed to fostering a system that avoids conflicts of interests and

[37] EPE, *supra* note 22, §§ 2.3(p)–(s); FEDERAL ENVIRONMENTAL PROTECTION AUTHORITY OF ETHIOPIA BUSINESS PROCESS REENGINEERING § 1.2.1 (2010); FEPAE BSC, *supra* note 26, § 1.7; RCAE BSC, *supra* note 26; MINISTRY OF WATER, ENERGY AND IRRIGATION OF ETHIOPIA BALANCED SCORECARD §§ 1.3.2, 1.4 (2011-2015); MFEDE BSC, *supra* note 26.

duplications of efforts by assigning responsibilities to separate organizations for environmental and natural resource development and management. The environmental governance in Ethiopia has two wings: (1) environmental and natural resource development and management; and (2) environmental protection, regulation, and monitoring. It aims to exploit the existing institutions to the maximum extent while minimizing cost.[38]

The federal government sets the minimum threshold of environmental standards, and states have the duty to ensure, at the minimum, the implementation of the federal standards.[39] The federal government in Ethiopia is mandated to enact specific laws to utilize and conserve land and other natural resources.[40] It has the duty to administer and enact specific laws of the waters linking two or more states or crossing Ethiopia's national boundaries.[41] States must administer natural resources in accordance with the federal laws. In this way, Ethiopia practices fiscal federalism.[42] Fiscal federalism is a process of devolving fiscal decision-making power across multi-levelled governments.[43] While local governments are better situated to address issues that fall within their jurisdiction, the federal government is better positioned to address issues that have significant national effects.[44]

Subject to Ethiopia's federal and state powers of taxation, the federal and state entities must share revenue under this arrangement, and they have the duty to bear their respective financial burden.[45] In

---

38 EPE, *supra* note 22, §§ 5.1(c)–(d)(iv).

39 FPCP, *supra* note 22, at arts. 6(1)–(4); FEPOEP, *supra* note 17, at art. 15(2); The Addis Ababa City Government Executive and Municipal Service Organs Re-establishment Proclamation. Article 9(1), Proclamation No. 35/2012, Addis Negarit Gazetta, Year 4, No. 35, [hereinafter AAEMSORP].

40 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 55 § 2(a).

41 *Id.* at arts. 51 § 11, 55 § 2(a).

42 *Id.* at art. 52 § 2(d).

43 Abu Girma Moges, *An Economic Analysis of Fiscal Federalism in Ethiopia*, 10 NE. AFRICAN STUD. 111 (2003); Abu Girma Moges, *Fiscal Federalism in Theory and Practice*, 5 ETH. E-J. RES. & INNOVATION 6 (2013); Luiz R. De Mello Jr., *Fiscal Decentralization and Intergovernmental Fiscal Relations: A Cross-Country Analysis*, 28 WORLD DEV. 365 (2000).

44 Alm & Banzhaf, *supra* note 7, at 196–97; Molina, *supra* note 10, at 88.

45 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995 arts. 51 § 10, 52 § 2(e), 55 §§ 11, 94(1), 95–99; THE HOUSE OF FEDERATION OF THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA, THE FEDERAL BUDGET GRANT DISTRIBUTION FORMULA 70, 118 (2012/13–2016/17); *see* AACGRCP, *supra* note 22, at art. 53 (explaining the equivalence between taxing and spending power as an indicator of

addition, they have the duty to ensure that any tax is related to the source of revenue that is taxed;[46] and, they must ensure that the tax does not adversely affect the relationship between the federal government and regional states.[47] Thus, the fiscal framework of Ethiopia ensures that the introduction of federal and state revenue instruments are consistent with their governmental mandates and fiscal needs.[48] In addition, according to early research, the scope of environmental tax is legally viable to reflect the degree of Ethiopia's environmental and fiscal federalism and the absence of legal room in the design of Ethiopia's environmental and fiscal federalism for environmental tax-based unfair competition and a race to the bottom.[49]

B. Federal Environmental Regulatory Authorities

1. Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE)

The Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE) has the duty to enforce federal environmental policies and laws as well as spearhead the assurance of environmental protection.[50] Implementation of the federal policies and laws must be done without wasting resources.[51] Where necessary, the MEFCCE may delegate part of its obligations to other federal and regional organizations.[52]

The MEFCCE mandates environmental standards to the states.[53] However, a state may implement its own standard, on the condition

---

the true degree of autonomy of local governments); Frans Vanistendael, *Legal Framework for Taxation*, *in* 1 TAX LAW DESIGN AND DRAFTING 50 (Victor Thuronyi ed., 1996).

46 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, arts. 96–100 § 1; Taddese Lencho, *supra* note 28, at 340.

47 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 100 § 2; Taddese Lencho, *supra* note 28, at 340, 346; *see also* Fasil Nahum, CONSTITUTION FOR NATION OF NATIONS: THE ETHIOPIAN PROSPECT 36, 200 (1997).

48 Gebregiorgs, *supra* note 19, at 21.

49 *Id.* at 18–20.

50 EPE, *supra* note 22, § 5.3(c); DPDEOFDRE, *supra*, note 17, at art. 10(1)(b); FEPOEP, *supra* note 17, at art. 5.

51 DPDEOFDREA, *supra* note 17, at art. 4(33)(1)(f).

52 DPDEOFDRE, *supra* note 17, at art. 10(7), FEPOEP, *supra* note 17, at art. 6(24).

53 FEPOEP, *supra* note 17, at art. 6(7); FPCP, *supra* note 22, at art. 6(1)(e).

that it is not less stringent than the MEFCCE's.[54] The Ethiopian Standards Agency (ESA) also mandates minimum Ethiopian national standards[55] by recognizing standards published by national, regional, or international standardization bodies.[56] Subsequently, stakeholders must develop their respective derivative standards.[57]

In practice, the MEFCCE has independently approved the Standards for Industrial Pollution Control in Ethiopia, which was adopted by the federal institutions, regional states, and the AAA.[58] Thus, the standard formulation mandate of the MEFCCE overlaps with the mandate of the ESA, leaving it susceptible to a duplication of efforts.[59]

The MEFCCE has a duty to establish a federal EIA system for projects that are subject to licensing, execution, and supervision by a federal agency or likely to produce trans-regional impacts. It is

---

54 FPCP, *supra* note 22, at art. 6(4); FEPOEP, *supra* note 17, at art. 15(2); AAEMSORP, *supra* note 39, at art. 9(1).

55 Ethiopian Standards Agency Establishment Council of Ministers Regulation. Article 5(1), Proclamation No. 193/2010, Negarit Gazetta, Year 17, No. 13.

56 *Id.* at art. 6(3).

57 Tesfaye Yakob, *supra* note 32; Emission Waste Tax Focus Group discussion with Mehari Wendmagegn, Compliance, Monitoring, and Evaluation Director, Ministry of Envtl. & Forest of Eth., Addis Ababa, Eth., (July 5, 2014); Emission Waste Tax Focus Group discussion with Girmaye Teshome, Compliance Monitoring Expert, Ministry of Envtl. & Forest of Eth., Addis Ababa, Eth., (July 5, 2014); Emission Waste Tax Focus Group discussion with Tesfaye Yakob, Envtl., Health and Safety Standard Dev. Team Leader, Eth. Standards Agency, Addis Ababa, Eth., (July 5, 2014); Emission Waste Tax Focus Group discussion with Adugna Mekonnen Beyene, Deputy Manager, Addis Ababa City Gov't Envtl. Protection Authority, Addis Ababa, Eth., (July 5, 2014); Emission Waste Tax Focus Group discussion with Tamene Mengistu, Envtl. Pollution Inspector, Addis Ababa City Gov't Envtl. Protection Authority, Addis Ababa, Eth., (July 5, 2014).

58 FEDERAL STANDARDS FOR INDUSTRIAL POLLUTION CONTROL IN ETHIOPIA (2011) [hereinafter FSIPCE]; interview with Haileslassie Sebhatu, Gen. Manager, Addis Ababa City Gov't Envtl. Protection Authority, Addis Ababa, Eth., (Mar. 27, 2014); interview with Adugna Mekonnen, Deputy Manager, Addis Ababa City Gov't Envtl. Protection Authority, Addis Ababa, Eth., (Apr. 1, 2014); interview with Meseret Mengiste, Envtl. Awareness & Pollution Inspection Team Leader, Addis Ababa City Gov't Envtl. Protection Authority, Addis Ababa, Eth. (Apr. 7, 2014); interview with Asamnew Tekleyowhans, Legal Affairs Officer, Addis Ababa City Gov't Envtl. Protection Authority, Addis Ababa, Ethiopia (May 2, 2014); interview with Adugna Mengste, Envtl. Safeguards Team Leader, Ministry of Industry of Eth., Addis Ababa, Eth. (July 7, 2014); interview with Kifle Alemayehu, Director of Water Utilisation, Permit & Admin. Directorate, Ministry of Water, Irrigation and Electricity of Eth., Addis Ababa, Eth. (July 3, 2014); interview with Zewdu Tefera, Legal Affairs Directorate Director, Ministry of Water, Energy & Irrigation of Eth., Addis Ababa, Eth. (Apr. 2, 2014); Emission Tax Focus Group Discussion, *supra* note 57.

59 Interview with Tesfaye Yakob, *supra* note 32; interview with Mehari Wendmagegn, *supra* note 32; Emission Tax Focus Group Discussion, *supra* note 57.

responsible for evaluating and monitoring the implementation of its EIA study and environmental management plans, respectively.[60] Nevertheless, in practice, the Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE)[61] and Ministry of Industry of Ethiopia (MIE)[62] are reviewing the portions of the EIA that fall under their jurisdiction.

Since the power to review Environmental Impact Assessment Study Report has been delegated to institutions that have a conflict of interest in the review, and because the decision to delegate the duty was based on the decision of the Council of Ministers of Ethiopia, it is vulnerable to substantive and procedural ultra-virus, proceeding "beyond one's legal power or authority."[63] This is because the delegation of the power to review EIAs to the MWIEE and the MIE allows them to review their own projects; thus, creating a conflict of interest.

When projects are subject to federal licensing, execution, and supervision, or when they are likely to produce trans-regional impacts, they are subject to the MEFCCE's permit, regulation, and audit system.[64] Additionally, the MEFCCE must ensure, monitor, and evaluate the adequacy of hazardous and municipal waste management and disposal systems.[65] In executing these responsibilities, the MEFCCE is subject to the Office of the Federal Auditor General of Ethiopia's environmental performance audit, pursuant to its

---

60 DPDEOFDREA, *supra* note 17, at arts. 4(33)(1)(b)–(e); FEPOEP, *supra* note 17, at arts. 6(4)–(5); Federal Environmental Impact Assessment Proclamation. Article 14, Proclamation No. 299/2002, Negarit Gazetta, Year 9, No. 11 [hereinafter FEIAP].

61 The Environmental Impact Assessment and Social Development Office of the MWIEE must review the *EIA* of water, irrigation and energy projects. FEPAE BSC, *supra* note 26; Letters of Delegation of the Power to Review Environmental Impact Assessment to Sectoral Institutions, ENVIRONMENTAL IMPACT ASSESSMENT SOCIAL IMPACT TO MINISTRY OF INDUSTRY [hereinafter FEPAE LDPR EIA SI]; interview with Getnet Fetene, Senior Monitoring & Evaluation Expert in Envtl. Impact Assessment & Soc. Dev. Off., Ministry of Water, Irrigation & Electricity of Eth., Addis Ababa, Eth. (Dec. 19, 2015).

62 The Ministry of Industry of Ethiopia's Environmental Safeguards Team is delegated to review the EIA of proponents that fall in its domain and issues unconditional or conditional approval or rejects the proposed project. FEPAE LDPR EIA SI, *supra* note 61; Gebregiorgs, *supra* note 32, at 51; interview with Adugna Mengste, *supra*, note 58.

63 Gebregiorgs, *supra* note 32, at 83.

64 FEPOEP, *supra* note 17, at art. 6(5); FEIAP, *supra* note 60, at art. 14; Prevention of Industrial Pollution Council of Ministers Regulation. Articles 5, 13, Proclamation No. 159/2008, Negarit Gazetta, Year 15, No. 14 [hereinafter PIPCMR].

65 FPCP, *supra* note 22, at arts. 4(1), 5(2) & 5(4).

establishment laws.[66] Possible conflicts of interest arise between states that have vested interests in trans-regional issues in the administration of trans-regional projects since the authority to regulate and permit such projects in the AAA is assigned to only one state's environmental regulatory organization, the Addis Ababa Environmental Protection Agency (AAEPA).

2. Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE)

The Ethiopian Constitution enables,[67] the Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE) to ensure compliance of water projects with federal laws[68] and manage water resources permits.[69] To ensure the highest social and economic benefits, the MWIEE is responsible for the planning, management, and protection of Ethiopia's water resources.[70] For example, the MWIEE may issue permits for the release of treated waste into water resources and may collect effluent charges from permit holders,[71] prepare directives and standards, and determine the way water users utilize water resources.[72] Under the Ethiopian Federal Water Resources Management Proclamation, the MWIEE may also delegate part of its mandates to other government bodies.[73] Currently, the MWIEE has

66 The Office of the Federal Auditor General of Ethiopia relied on the International Organization of Supreme Audit Institutions Working Group on Environmental Auditing, as a source of international auditing standards. Office of the Federal Auditor General Establishment Proclamation (Amendment). Articles 4, 5(5) &16(3), Proclamation No. 669/2010, Negarit Gazetta, Year 16, No. 22; OFFICE OF FEDERAL AUDITOR GENERAL, PERFORMANCE AND ENVIRONMENTAL AUDIT MANUAL: AUDITORS GENERAL CAPACITY AND ENHANCEMENT PROJECT (2006); *see* interview with Paulos Zerihun, Performance Audit Director, Off. of Fed. Auditor Gen. of Eth., Addis Ababa, Eth. (Oct. 2, 2015) (explaining that the Office of Federal Auditor has developed the Federal Performance Audit and Environmental Audit Manual, and audited the MEFCCE two times).

67 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 51(11).

68 DPDEOFDRE, *supra* note 17, at art. 10(1)(b).

69 Ethiopian Federal Water Resources Management Proclamation. Article 2(19), Proclamation No. 197/2000, Negarit Gazetta, Year 6, No. 25, art. 2(19) [hereinafter EFWRMP] (defining "water resource management" as "activities that include water resources development; utilization, conservation, protection and control").

70 *Id.* at arts. 6(3), 8(1).

71 *Id.* at arts. 13, 22(1)–(2); Ethiopian Water Resources Management Regulation. Article 3, Proclamation No. 115/2005, Negarit Gazetta, No. 305, art. 32(1) [hereinafter EWRMR].

72 EFWRMP, *supra* note 69, at art. 8(1).

73 *Id.* at art. 8(2); DPDEOFDRE, *supra*, note 17, at art. 10(7).

delegated its effluent regulatory power for trans-regional and national water bodies in the AAA to the AAEPA.[74]

C. Addis Ababa Administration Environmental Regulatory Authorities

1. Addis Ababa Environmental Protection Authority (AAEPA)

Subsequent to its duty to establish an independent environmental agency that regulates and protects the environment,[75] the AAA has tasked the Addis Ababa Environmental Protection Authority (AAEPA) to ensure adherence to federal environmental standards, or to its own more-stringent ones.[76] The AAEPA must review the EIA studies of projects that are not subject to federal licensing and those that are unlikely to result in trans-regional impacts.[77] The AAEPA has established an EIA Version Coordinator's Office, which evaluates and monitors the implementation of EIA studies and environmental management plans.[78]

The AAEPA has introduced up-to-date instrumental, micro-biology, physicochemical, and soil and air environmental laboratories,

---

74 Interview with Kifle Alemayehu, *supra* note 58.

75 FEPOEP, *supra* note 17, at art. 15(1).

76 The AAEPA has adopted the FSIPCE, *supra* note 58; AAEMSORP, *supra* note 39, at art. 11(1); *but see* Addis Ababa City Government Environmental Pollution Control Regulation. Article 5(2), Proclamation No. 25/2007, Addis Negarit Gazetta, Year 4, No. 56 [hereinafter AAEPCR] (setting forth more restrictive environmental standards).

77 AARPCR, *supra* note 76.

78 FEIAP, *supra* note 60, at arts. 3, 14(2); Addis Ababa City Government Environmental Impact Assessment Regulation. Articles 5(2), 17, Proclamation No. 21/2006, Addis Negarit Gazetta, Year 4, No. 48, [hereinafter AAEIAR]; interview with Seid Abdela, Envtl. Impact Assessment Version Coordinator, Addis Ababa City Gov't Envtl. Protection Authority, Addis Ababa, Eth. (May 7, 2014); interview with Andargachew Getachew, Megenagna Branch Officer, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Jan. 4, 2016); interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, Envtl. Awareness & Pollution Inspection Officer, Addis Ababa City Government Envtl. Protection Authority, Addis Ababa, Eth. (Apr. 7, 2014); interview with Senait Asaminew, Envtl. Awareness & Pollution Inspection Officer, Addis Ababa City Gov. Envtl. Protection Authority, Addis Ababa, Eth. (Dec. 28, 2015); Melkamu Belachew, Powers and Functions of the Federal Inland Revenue Authority and the Position of the Tax Appeal Commission (2003) (unpublished senior thesis, Addis Ababa University) (on file with the Faculty of Law Library Archives); *see* ADDIS ABABA MINISTRY OF NAT. RES. DEV. & ENVTL. PROT., NAT'L CONSERVATION STRATEGY SECRETARIAT, TRANSITIONAL GOV'T OF ETH., THE CONSERVATION STRATEGY OF ETHIOPIA VOLUME III: INSTITUTIONAL FRAMEWORK AND OPERATIONAL ARRANGEMENTS § 4.2.1(70) (1997) [hereinafter CSE III].

that provide legal oversight of environmental regulations.[79] Moreover, the AAEPA has environmental inspectors that may require, without a court order, permits or documents upon unannounced requests. The purpose of these random investigations is to collect original samples for laboratory testing to reveal the extent of industrial compliance to the Federal Environmental Standard of Ethiopia.[80]

The AAEPA monitors industries within the AAA based on an audit report of industries, public complaint, and annual license renewal. To this effect, it has started to endorse a memoranda of understanding with investment, trade, and operating permit licensing organizations.[81] Furthermore, the AAEPA grants licenses, permits, and regulates both federal and local industrial, manufacturing, and service delivery organizations.[82] It also regulates and controls the disposal of industrial residue, by-products, and waste.[83] In addition, the AAEPA has a duty to collaborate with the Addis Ababa Cleanliness Administration Agency (AACAA) on the management and disposal of industrial and hospital waste, the preparation of landfills, and the prevention and control of environmental pollution.[84]

---

79 AAEPCR, *supra* note 76, at art. 11; *see* interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; DVD: Researcher's Video Record-Based Observation and Explanation of Addis Ababa Environmental Protection Laboratory and explanation (on file with author) (showing that except for a few parameters and human resource limitation and turnover, the lab is fully operational with interviews with Mesfin Guche, Instrumental Laboratory Expert, Brhanu Ahmed, Micro-Biology Laboratory Expert; Daniel Bogale, Physicochemical Laboratory Expert, Dawit Alemu, Soil Laboratory Expert; Addis Ababa City Government Environmental Protection Authority 2014); interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78.

80 AAEPCR, *supra* note 76, at arts. 12, 13(1)(b)–(d), 13(1)(h); *see* Proclamation of the Constitution of the Federal Democratic Republic of Ethiopia. Article 26(3), Proclamation 1/1995, Negarit Gazetta (extra-ordinary), Year 1, No. 1 (stating, in part, that public officials may place restrictions on the right to privacy for the protection of health in compelling circumstances); *see also* FPCP, *supra* note 22, at arts. 7–9, 13 (stating, in part, the scope of environmental inspectors' authority, rights to appeal the inspectors' work, and offenses for hindering inspectors); interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78.

81 MEMORANDUM OF UNDERSTANDING BETWEEN THE MINISTRY OF TRADE OF ETHIOPIA AND ADDIS ABABA ENVIRONMENTAL PROTECTION (June 2013); interview with Senait Asaminew, *supra* note 78.

82 PIPCMR, *supra* note 64, at arts. 5, 13; AAEPCR, *supra* note 76, at arts. 14, 15(4), 16–20; *see also* FSIPCE, *supra* note 58 (detailing standards for industrial pollution).

83 AAEMSORP, *supra* note 39, at art. 11(3).

84 AAWMCDR, *supra* note 22, at art. 22(3).

Subject to the environmental performance audit of the Office of the Chief Auditor of the AAA,[85] the AAEPA is expected to undertake an external environmental audit and to appraise the internal audit of industries. Because both the AAEPA and sixty-six percent of the industries in Ethiopia currently fail to undertake an environmental audit, the AAEPA's inspection tools appear to not be functioning as intended.[86]

2. Addis Ababa Water and Sewerage Authority (AAWSA)

Pursuant to the AAA's integrated waste management policy,[87] the Addis Ababa Water and Sewerage Authority (AAWSA) is required to prepare a master plan for sewerage lines, prepare contract documents, identify financial demands, and improve the liquid waste disposal system in the city.[88] The AAWSA also holds the exclusive right to provide sewer and sludge services and to install and operate their treatment and disposal system on a fee basis.[89] Subsequently, the AAWSA is mandated by local proclamation to collect a sanitary service tariff[90] and to manage its internal and external funds.[91]

3. Addis Ababa Cleanliness Administration Agency (AACAA)

The Addis Ababa Cleanliness Administration Agency (AACAA) was established as a means of ensuring integrated solid waste management in Addis Abba.[92] In accordance with its mandate, the AACAA issues directives, competence certificates, and work permits.[93] The agency incorporates alternative service delivery systems, facilitates contract-based payment to public and private

85 AACGRCP, *supra* note 22, at art. 26(1).

86 MEFCCE AIPEESI, *supra* note 33, at 18; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78.

87 FPCP, *supra* note 22, at art. 5(1); EPE, *supra* note 22, § 3.7(c).

88 AAEMSORP, *supra* note 39, at arts. 59(1), (3)–(4), (6).

89 Addis Ababa Water and Sewerage Authority Re-establishment Proclamation. Proclamation No. 10/1995, Negarit Gazetta, Year 18, No. 3 [hereinafter AAWSARP].

90 Regulation to Determine and Collect the Sanitary Service Tariff of the Addis Ababa City Government. Articles 8(1)–(4) Proclamation No. 25/2009, Addis Negarit Gazetta, Year 2, No. 25 [hereinafter RDCSSTAACG].

91 AAWSARP, *supra* note 89, at art. 25.

92 AAEMSORP, *supra* note 39, at art. 55(1), (3); FPCP, *supra* note 22, at art. 5(1); RDCSSTAACG, *supra* note 90, at art. 3(2); ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY SANITATION SERVICE DELIVERY STANDARD 2013/14 [hereinafter AACAA SSDS].

93 AAWMCDR, *supra* note 22, at art. 36.

partners, and has introduced a tariff system that includes a payment function.[94] The AACAA may also delegate branches of the agency to collect sanitary service charges.[95]

4. Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO)

The Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) was established to oversee Addis Ababa's solid waste transfer stations and re-use and disposal site projects.[96] It manages the Repi Landfill, and has introduced a solid waste weighbridge. The AASWRDPO has also introduced a landfill service charge and waste-transfer station that it will implement and manage upon approval.[97] Finally the AASWRDPO has the duty to introduce a "Reduce, Reuse, Recycle, and Recover" system to the landfill, and will facilitate the eventual closure of the landfill in aspiration that the site will serve a more sustainable purpose in the future.[98]

D. Public-Private Partnership (PPP)

The term "public-private partnership" (PPP) stands for the transfer "of a good or a service currently provided by the public sector, either in whole or in part, to the private sector."[99] PPPs are an ideal way for the public sector to complete infrastructure projects by relying on the private sector's diverse experience, capacity, and affordability.[100]

---

94 AAEMSORP, *supra* note 39, arts. 55(5), (9)–(12); RDCSSTAACG, *supra* note 90, at art. 7(5); interview with Dawit Ayele, Gen. Manager, Addis Ababa Cleanliness Admin. Agency, Addis Ababa, Eth. (July 1 2014); interview with Hamere Kebede, Budget & Plan Process Owner, Addis Ababa Cleanliness Admin. Agency, Addis Ababa, Eth. (June 21, 2014 & Oct. 5, 2015); interview with Belaynesh Tegen, Lema Sema Private Solid Waste Collector, in Solid Waste Tax Focus Group Discussion, Addis Abba, Eth. (June 21, 2014).

95 AAWMCDR, *supra* note 22, at art. 21(7); AAEMSORP, *supra* note 39, at art. 55(13).

96 AAEMSORP, *supra* note 39, at art. 58(1); SWMP, *supra* note 22, at art. 14.

97 AAEMSORP, *supra* note 39, at arts. 58(2)–(7).

98 AAEMSORP, *supra* note 39, at arts. 58(3)–(6); Solid Waste Tax Focus Group Discussion with Nega Fantahun, General Manager, Addis Ababa Recycling and Disposal Project Office, Addis Ababa, Eth. (June 21, 2014); interview with Alemayehu Neme, Deputy Gen. Manager, City Admin. of Addis Ababa Solid Waste Recycling & Disposal Project Off. Addis Ababa, Eth. (Apr. 16, 2014 & Oct. 7, 2015).

99 M. Massoud & M. El-Fadel, *Public-Private Partnerships for Solid Waste Management Services*, 30 ENVTL. MGMT. 621, 621 (2002).

100 U.N. Conference on Environment & Development, *Agenda 21*, ¶ 27, U.N. Doc. A/CONF.151/26 (Vol. III) (June 1992) [hereinafter *Agenda 21*]; Daniela Parvu & Cristina Voicu-Olteanu, *Advantages and Limitations of the Public–Private Partnerships and the Possibilities of Using them in Romania*, 27E TRANSYLVANIAN REV. ADMIN. SCI. 189,

Indivisible goods, whose benefits cannot be priced, and the principle of exclusion does not apply, are called "pure public goods." In contrast, "pure private goods" are completely divisible and subject to the principle of exclusion.[101] In reality, most goods possess both elements of "publicness" and "privateness." Thus, it is rare to encounter goods that are purely public or purely private.[102] Applying this reality to distinguish the nature of goods in the market, goods can be classified as "quasi-public" or "quasi-private." For example, a quasi-public good is neither purely public nor purely private, but is predominately public in nature. Economists argue, and I agree, that the role of the state should be limited to regulating quasi-public goods; leaving the private sector to self-regulate quasi-public goods.[103]

Environmental governance must acknowledge the role of PPPs, and beyond the sole purpose of providing environmental infrastructure and services. Rather, PPPs should be viewed as arrangements where conscientious environmental norms are formulated and replicated.[104] This approach requires the involvement of every level of government to create a framework where a variety of partnerships can develop and be effective.[105]

As explained below, Ethiopia is in a position to develop multilevel environmental governance strategies that encourage PPPs to participate in infrastructure service projects. For example, with public participation[106] and a free market economy in mind,[107] Ethiopia is

190–92 (2009); interview with Netsanet Raya, Chief Operation Officer, Kifya Fin. Tech. plc, Addis Ababa, Eth. (June 23, 2014); interview with Dawit Ayele, *supra* note 94; interview with Gemal Rashid, Deputy Gen. Manager Sewerage Disposal, Treatment & Reuse Core Process, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Apr. 2, 2014); interview with Nega Getahun, Legal & Insurance Director, Addis Ababa Water & Sewerage Authority Addis Ababa, Eth. (Mar. 25, 2014).

101 H.L. BHATIA, PUBLIC FINANCE 4 (19th ed. 1998); TOM TIETENBURG & LYNNE LEWIS, ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS 31 (9th ed. 2011).

102 BHATIA, *supra* note 101, at 7.

103 *Id.* at 8.

104 Tim Forsyth, *Building Deliberate Public–Private Partnerships for Waste Management in Asia*, 36 GEOFORUM 429, 429 (2005).

105 Van Dijk Meine Pieter & Tilay Mesfin, *Micro-Privatization of Solid Waste Collection in Addis Ababa*, 32 WATERLINES 154, 156 (2013).

106 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 92(4); *Rio Declaration*, *supra* note 3, ¶ 10; EPE, *supra* note 22, §§ 2.2(h), 4.1(e), 4.2, 4.5(d), 5.2(a).

committed to pursuing policies that expand public job opportunities for the unemployed.[108] The country is also committed to a democratic developmental state ideology that calls for government to withdraw services that can be effectively provided by quasi-public markets.[109] This strategy is also pervasive in the country's economic development policy, which emphasizes a minimally intrusive and facilitative role for government.[110] In effect, the government provides public goods only where they cannot be provided by the private sector.[111] Thus, as exampled by these existing government strategies, Ethiopia may be well-positioned to engage with PPPs to provide quasi-public infrastructure and services.

Currently, the AAA is exploring PPPs for waste management services. The AAA recognized the advantages of PPP-based waste management,[112] and it is committed advancing a PPP policy in this sector by providing a time-restricted tax exemption from any profit and customs duties on imports, subsidized government landfills, long-term loans, and free land to participating sanitary service providers.[113] At the moment, PPPs are only partly involved in solid waste collection, sludge dislodging, sludge cake management, Repi Waste Energy, and solid waste tax collection.[114]

---

107 *See* Trade and Practice Proclamation. Article 3, Proclamation No 329/2003, Negarit Gazetta, Year 9, No. 49; MINISTRY OF FIN. & ECON. DEV., GROWTH AND TRANSFORMATION PLAN OF ETHIOPIA: 2010/11-2014/15, at 64 (2010) [hereinafter GTPE I].

108 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, arts. 41(6), 90; *see* GTPE I, *supra* note 107, at 83; NAT'L PLANNING COMM'N, GROWTH AND TRANSFORMATION PLAN II OF ETHIOPIA: 2015/16-2020/21 (2016) (discussing the potential for industries in Ethiopia to generate job opportunities).

109 ETHIOPIA PEOPLES' REVOLUTIONARY DEMOCRATIC FRONT POLICY MANUAL (2011); interview with Dawit Ayele, *supra* note 94; Mehret Ayenew, *The Growth and Transformation Plan: Opportunities, Challenges and Lessons*, *in* REFLECTION ON DEVELOPMENT IN ETHIOPIA NEW TRENDS, SUSTAINABILITY AND CHALLENGES 7 (Dessalegn Rahmato, Meheret Ayenew & Asnake Kefale eds., 2014).

110 CSE III, *supra* note 78, § 4.2.

111 *See* NCS II, *supra* note 23, §§ 1.5, 3.6.

112 AAEMSORP, *supra* note 39, at arts. 58(2)–(7).

113 AAWMCDR, *supra* note 22, at art. 29(1)–(5).

114 Interview with Dawit Ayele, *supra* note 94.

E. Tax Administration Systems

1. Ethiopian Revenues and Customs Authority (ERCA)

The Ethiopian Revenues and Customs Authority (ERCA) must introduce an equitable, efficient, and effective revenue assessment and collection system, while preventing tax fraud and evasion.[115] Furthermore, it must support the goal of harmonizing federal and regional tax administration systems.[116] To this end, the ERCA may also issue necessary directives[117] and enter contracts and international agreements to comply with federal mandates.[118]

2. Addis Ababa Revenue Authority (AARA)

The Addis Ababa Revenue Authority (AARA) is responsible for setting up an effective tax collection system, and undertaking studies that will inform its recommendation of new revenue sources. Once a new system has been identified, the AARA must also monitor its progress[119] to mitigate tax avoidance, evasion, and other illegal activities.[120] Intergovernmental communication and transparency regarding tax collection practices[121] will be essential to the AARA's ability to successfully execute agreements regarding tax administration.[122] Moreover, the AARA must collect a sanitary service tariff rate with trade licenses and other taxes.[123]

The AAA may delegate any or all of the powers of the AARA to an appropriate federal government body.[124] Accordingly, it has delegated[125] its power to the ERCA,[126] and the Addis Ababa Revenues

115 Ethiopia Revenues and Customs Authority Establishment Proclamation. Articles 5–6 Proclamation No. 587/2008, Negarit Gazetta, Year 14, No. 44.

116 *Id.* at art. 5(5).

117 *Id.* at art. 20.

118 *Id.* at art. 6(16).

119 *See* AAEMSORP, *supra* note 39, at art. 13; AARAR, *supra* note 21, at arts. 8(1), 9(1)–(7).

120 AARAR, *supra* note 21, at art. 8(3).

121 *Id.* at art. 8(5).

122 *Id.* at art. 9(16).

123 RDCSSTAACG, *supra* note 90, at art. 9(1).

124 AAEMSORP, *supra* note 39, at art. 13(1).

125 The delegation is an extension of the Financial Administration and Revenue Reform Sub-Program and tax harmonization. Interview with Yirgalem Eshetu, *supra* note 28.

126 MEMORANDUM OF UNDERSTANDING BETWEEN ADDIS ABABA ADMINISTRATION AND ETHIOPIAN REVENUES AND CUSTOMS AUTHORITY (Sept. 2011) [hereinafter

and Customs Branches' Support and Follow-up Directorate has been established as a liaison office between the AAA and the ERCA.[127] While the ERCA runs the operations and the AAA covers the cost of liaison office operations, the Addis Ababa Bureau of Finance and Economic Development (AABFED) administers the revenue collected.[128]

II
SOLID WASTE COLLECTION AND TRANSPORTATION

As previously stated in this Article, public-private partnerships (PPPs) allow for public sector providers to transfer the issuance of goods and services, either wholly or partially, to the private sector.[129] Specifically, PPPs provide an ideal opportunity for the public sector to utilize the advantages of private sector providers' diversity of experience, project capacity, and accounting in completing quasi-public infrastructure projects.[130] However, for PPPs to be effective, government at all levels must be involved in creating a framework that fosters collaboration.[131] Below, several examples of ongoing or potential PPPs in the governance of solid waste management in Addis Ababa are explored.

A. Municipal Solid Waste Collection Service

Efficient municipal solid waste management[132] requires regulations based on market standards from private services.[133] The AAA is

MUBAAAERCA]; interview with Belete Ahmed, *supra* note 28; interview with Yirgalem Eshetu, *supra* note 28; interview with Atkilt Gebrezgabiher, *supra* note 28.

127 Interview with Yirgalem Eshetu, *supra* note 28; interview with Atkilt Gebrezgabiher, *supra* note 28.

128 MUBAAAERCA, *supra* note 126; interview with Belete Ahmed, *supra* note 28; interview with Yirgalem Eshetu, *supra* note 28; interview with Atkilt Gebrezgabiher, *supra* note 28.

129 Massoud & El-Fadel, *supra* note 99.

130 *Agenda 21*, *supra* note 100; Daniela Parvu & Cristina Voicu-Olteanu, *Advantages and Limitations of the Public–Private Partnerships and the Possibilities of Using them in Romania*, 27E TRANSYLVANIAN REV. ADMIN. SCI. 189, 189 (2009), http://rtsa.ro/tras/index.php/tras/article/download/388/378 (last visited Apr. 15, 2018); interview with Netsanet Raya, *supra* note 100; interview with Dawit Ayele, *supra* note 94; interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100.

131 Van Dijk Meine Pieter & Tilay Mesfin, *Micro-Privatization of Solid Waste Collection in Addis Ababa*, 32(2) WATERLINES 156 (2013).

132 SWMP, *supra* note 22, at art. 2(7) (defining solid waste management as "the collection, transportation, storage, recycling or disposal of solid waste, or subsequent use of a disposal site that is no longer").

committed to creating conditions that allow for PPP-based[134] solid waste collection, transportation, and disposing services.[135] But, the AAA must also ensure that PPP-based service providers comply with existing environmental regulations. To ensure compliance, the AACAA has enacted regulations for solid waste service providers, regardless of their public- or private-sector status. For example, a person that transports waste to a transfer site or a disposing site with a vehicle must conform with the city-mandated vehicle, instrument, and service standard requirements, such as using vehicles that have the capacity to cover and hold the waste, taking due care not to cause environmental pollution,[136] and posting the required notices of the type and nature when transporting hazardous waste.[137] This last requirement for hazardous waste is explored further below.

B. Hazardous Solid Waste Transport and Disposal Permit System

Pursuant to the AAEPA's delegation of hazardous waste management responsibilities by the MEFCCE, no person may transport or dispose of hazardous waste without obtaining authorization from the AAEPA.[138] The AACAA is required to confirm the quality and classification of hazardous waste, and any person who generates hazardous waste must manage and dump it with due care.[139]

---

133 *See* Massoud & El-Fadel, *supra* note 99.

134 SWMP, *supra* note 22, at art. 4(1).

135 AAWMCDR, *supra* note 22, at art. 17(1); ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY SOLID WASTE MANAGEMENT POLICY § 6.2.2. (1996) [hereinafter AACAA SWMP].

136 AAWMCDR, *supra* note 22, at arts. 8(1)(a)–(b), 18(1); SOLID WASTE COLLECTING CONTRACTUAL FORMAT OF ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY AND PRIVATE SOLID WASTE COLLECTING ORGANIZATIONS § 5.2.6 (2006) [hereinafter SWCCF AACAA PSWCO]; AACAA SSDS, *supra* note 92, at 12.

137 AAWMCDR, *supra* note 22, at art. 13(3)–(4); SWMP, *supra* note 22, at art. 13.

138 FPCP, *supra* note 22, at arts. 2(9), 4(1) (defining "Hazardous Waste"); AAWMCDR, *supra* note 22, at art. 13(4); Federal Democratic Republic of Ethiopia, Environmental Protection Authority, Letter to the Addis Ababa Environmental Protection Authority Ref. no. 8 1.1 1089, Date 25 02 2012 [hereinafter FDRE EPA L AAEPA]; Federal Democratic Republic of Ethiopia Environmental Protection Authority, Letter to the Ministry of Trade of Ethiopia, Ref. No. 8 1.1 2245, Date 08 08 2012 [hereinafter FDRE EPA L MTE]; AAEPCR, *supra* note 76, at art. 2(8).

139 AAWMCDR, *supra* note 22, at art. 13(3).

In the AAA, an estimated two-to-four thousand tons of hazardous waste is generated per year.[140] The hazardous waste must be sorted at its source, stored in specific conditions, and managed by private companies employed by the waste producers.[141] In practice, two types of hazardous waste transport systems exist: overt hazardous solid waste transportation and disposal, and covert hazardous solid waste transportation and disposal. Overt hazardous solid waste transportation and disposal must obtain the proper permits from "concerned organizations."[142] After securing the appropriate permits, it is sealed and buried in the Repi Landfill.[143] On the other hand, covert hazardous solid waste transportation and disposal is often not subject to any permit system.[144] This is because what is transported and disposed of in the Repi Landfill is often a mix of both municipal and hazardous solid wastes.[145] Thus, while there is a functioning permit system for overt hazardous solid waste transportation and disposal, there is not an accurate and enforceable permit system for covert waste.

In the AAA, there are currently 610 household and zoning-based small solid waste collecting organizations that collect 1 m^3 per 60 Ethiopian Birr (ETB).[146] The schedule of the AAA instructs small solid waste collecting organizations to work two times a week in solid

140 AFDD/AACG SWMSIR, *supra* note 33, at 53.

141 *Id.* at 53, 105.

142 Group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98; interview with Dawit Ayele, *supra* note 94.

143 Group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98.

144 Interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, Deputy General Manager, Addis Ababa Cleanliness Admin. Agency, Addis Ababa, Eth. (May 9, 2014 & Oct. 7, 2015); group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98; interview with Ephrem Sisay, Landfill Officer, City Admin. of Addis Ababa Solid Waste Recycling & Disposal Project Off., Addis Ababa, Eth. (May 9, 2014).

145 AFDD/AACG SWMSIR, *supra* note 33, at 53; SIAKDSCRP, *supra* note 33, at 10; interview with Dawit Ayele, *supra* note 94.

146 MEMORANDUM OF UNDERSTANDING BETWEEN ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY AND ADDIS ABABA WATER AND SEWERAGE AUTHORITY (2011) [hereinafter MUBAACAAAAWSA]; ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY ANNUAL REPORT 7 (2015) [hereinafter AACAA AR 2015]; ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY, MICRO AND SMALL SOLID WASTE COLLECTING ORGANISATIONS ZONING AND SERVICE DELIVERY DIRECTIVE (2008) [hereinafter AACAA MSSWCOZSDD]; interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, *supra* note 144; interview with Seifu Nasir, Res., Awareness, Contract & Legal Admin., Addis Ababa Cleanliness Admin. Agency, Addis Ababa, Eth. (Apr. 8, 2014 & Oct. 5, 2015).

waste collection. Collected solid waste is deposited in 8 m^3 "skips" (solid waste containers) at transfer stations. Then, the AACAA's vehicles transport the waste from the transfer stations to the Repi Landfill.[147] According to the AACAA's Annual 2015 Report, this system of solid waste collection operated at a 99.8 percent success rate in meeting its waste management plan targets for household-based solid waste collection.[148]

C. Private Organizations

There are thirty private solid waste collection organizations that collect 1 m^3 per 74 ETB.[149] These organizations are contractually bound to collect municipal solid waste from customers (governmental and non-governmental organizations) and transport it to the Repi Landfill.[150] As a condition of a permit, the private organizations are required to have at least one truck that picks up solid waste containers; or, alternatively, one trash compactor and one truck that picks up solid waste.[151] At one point, some private organizations could use open truck solid waste collection because there were not enough waste collectors to meet demand. Currently, after complaints from the public and street sweepers, private waste collectors must now strictly conform to requirements, such as protective covering over solid waste when in transport.[152]

The AACAA 2015 report declared the projected household generated solid waste, and the actual amount collected in AAA[153] matched nearly perfectly.[154] Nevertheless, between sixty to sixty-five percent of the solid waste was disposed of in the Repi Landfill, and

147 SWMP, *supra* note 22, at art. 5(2); AACAA MSSWCOZSDD, *supra* note 146, at 3; AACAA SSDS, *supra* note 92, at 4–7; interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, *supra* note 144.

148 AACAA AR 2015, *supra* note 146, at 22–29.

149 Interview with Seifu Nasir, *supra* note 146; interview with Tadele Demeko, *supra* note 144.

150 SWCCF AACAA PSWCO, *supra* note 136, §§ 5.2.5–5.2.6.

151 *Id.* § 5.2.1; AACAA SSDS, *supra* note 92, at 22.

152 Solid waste collecting organizations were given a grace period of six months before they needed to unconditionally conform to the requirements. Interview with Seifu Nasir, *supra* note 146.

153 AACAA AR 2015, *supra* note 146, at 4, 25.

154 *Id.* at 25.

the remaining was dispersed in rivers and open fields.[155] This discrepancy demonstrates that the solid waste collection service is a work in progress and, as recently as 2015, the service is working poorly.

D Addis Ababa Administration Solid Waste Tax Collection System

1. Addis Ababa Cleanliness Administration Agency

The AACAA is expected to, subject to permission from the Addis Ababa Bureau of Finance and Economic Development (AABFED), open a special bank account for the sanitary service charge.[156] The AACAA may also delegate and endorse a memoranda of understanding with the institutions that collect sanitary service tariffs with water bills, trade licenses, and other taxes.[157] The AACAA is expected to ensure that the collected tariff is deposited in its account periodically,[158] arrange for the revenue to be utilized for sanitation objectives,[159] and submit periodic reports of the sanitary service revenue, management, and utilization to the AABFED and other concerned bodies.[160] Consequently, it has opened a special sanitary service tariff in the Commercial Bank of Ethiopia, and signed a memorandum of understanding with the Addis Ababa Water and Sewerage Authority (AAWSA).[161]

2. Addis Ababa Water and Sewerage Authority (AAWSA)

The AAWSA collects the sanitary service tariff monthly from the city with the customer's water bill.[162] Subsequently, it must identify and summarize the collected sanitary service charge, and timely deposit it into the AACAA's special sanitary service account.[163] In effectuating its tariff collection system, the AAWSA must also work

---

155 AACAA SWMP, *supra* note 135, at 1; AFDD/AACG SWMSIR, *supra* note 33, at 1; *see also* Bjerkli, *supra* note 34, at 1277–78; Researcher's Video Record-Based Observation of AAA (2016) (on file with author) EBS Television Broadcast Apr. 18, 2016 (confirming the dispersal of solid waste in rivers and open fields).

156 RDCSSTAACG, *supra* note 90, at art. 7(1).

157 *Id.* at arts. 7(2)–(3).

158 *Id.* at art. 7(4).

159 *Id.* at art. 7(6); *see also id.* at art. 3.

160 *Id.* at arts. 7(4)–(7).

161 Interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94; interview with Seifu Nasir, *supra* note 146.

162 RDCSSTAACG, *supra* note 90, at arts. 8(1)–(4).

163 *Id.* at art. 8(2).

in cooperation with the AACAA, and when necessary, endorse memorandums of understanding with the AACAA (and other concerned agencies) to ensure the efficient collection of the sanitary service tariff.[164] Thus AACAA has endorsed a memorandum of understanding with the AAWSA for the latter to collect the sanitary service tariff on behalf of the AACAA.[165] The AAWSA recently delegated the collection of the tariff to a PPP, model-based Kifya Financial Technology plc.,[166] and the AACAA is racing to create a memorandum of understanding to solidify this agreement.[167]

This arrangement of delegation has resulted in an issue of accountability between the AAWSA and the AACAA. That is, the AAWSA has not been computing the sanitary revenue strictly in-line with the sanitary tariff rate.[168] In 2015, the AAWSA deposited only forty percent of the monthly sanitary service tariff in the special bank account of the AACAA, which is estimated to be 151,002,460 ETB.[169] Thus, even though the AAWSA is collecting the sanitary service tariff, it is not depositing the exact amount at the right time. This presents a challenge in accountability in delegating service tariff collections to public *or* private entities.

3. Addis Ababa Revenue Authority

There are two other government organizations authorized by the AACAA to collect the sanitary service tariff, the Addis Ababa Revenue Authority (AARA) and the Addis Ababa Bureau of Trade and Industry Development (AABTID).[170] The AARA must collect sanitary service tariffs with trade licenses, deposit the tariffs in AACAA's special bank account, and report the amount to the AABFED, as authorized under a 2009 Addis Ababa city

164 *Id.* at art. 8(5).

165 MUBAAAERCA, *supra* note 126; interview with Tadele Demeko, *supra* note 144; interview with Seifu Nasir, *supra* note 146.

166 Interview with Netsanet Raya, *supra* note 100.

167 Interview with Tadele Demeko, *supra* note 144; interview with Seifu Nasir, *supra* note 146; interview with Hamere Kebede, *supra* note 94.

168 Interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94; interview with Seifu Nasir, *supra* note 146.

169 MUBAACAAAAWSA, *supra* note 146; AACAA AR 2015, *supra* note 146, at 29; interview with Gemal Rashid, *supra* note 100; interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94; interview with Seifu Nasir, *supra* note 146.

170 RDCSSTAACG, *supra* note 90, at art. 9(3).

proclamation.[171] Currently, the AARA has delegated its responsibilities under the proclamation's mandate to the Ethiopian Revenues and Customs Authority (ERCA), and the ERCA has started collecting the environmental related charges.[172] Here, as seen with the AACAA's challenge of accountability with the AAWSA, the AARA and ERCA are failing to properly track the tariffs from collection to deposit in the AACAA's account. For example, from 2011 to 2014, the AARA collected the following sanitary service charges:[173] 23,640,144.53 ETB in 2011; 46,757,124.29 ETB in 2012; 50,182,617.96 ETB in 2013; and, 43,409,699.69 ETB in 2015.[174] However, neither the AARA nor the ERCA earmarked the deposited sanitary service tariff collected in the AACAA special bank account.[175] Without proper documentation, there is no way to ensure that the funds generated by the tariffs are making it to the AACAA, or otherwise being sued for their appropriated purposes.

4. Addis Ababa Bureau of Trade and Industry Development (AABTID)

The AABTID administers the commercial registry and issues, renews, suspends, and has the authority to cancel licenses for business organizations.[176] It must also, subject to the endorsement of a memorandum of understanding with the AACAA,[177] collect the sanitary service charge of the city based on the registration and renewal of trade licenses, and then deposit those charges in the special bank account of the AACAA.[178] Nevertheless, the AABTID is neither earmarking nor depositing the solid waste charge collected in the special bank account of the AACAA.[179]

---

171 *Id.* at arts. 9(1)–(2).

172 MUBAAAERCA, *supra* note 126.

173 Addis Ababa Micro Tax Payers Sub-Cities Branches (2011-2014) [hereinafter Sanitary Service Spreadsheet]; interview with Hamere Kebede, *supra* note 94.

174 Sanitary Service Spreadsheet, *supra* note 173 (see the sanitary service charge of 11 months of 2014).

175 The AARA deposits the solid waste charge collected in the central treasury. Interview with Atkilt Gebrezgabiher, *supra* note 28; interview with Belete Ahmed, *supra* note 28; interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94.

176 AAEMSORP, *supra* note 39, at art. 21(2)(d).

177 RDCSSTAACG, *supra* note 90, at art. 10(3).

178 *Id.* at arts. 10(1)–(2).

179 Interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94.

Previous research suggests that since multiple public and private organizations are tasked with collecting tariffs and fees for sanitary services,[180] the system is only partially effective.[181] However, based on the findings of this Article, it is clear that the organizations failure to properly track and account for the collected money is largely due to the lack of effective administration by the governing agency, the AACAA.

III
LANDFILL TAXES AND SERVICES

A. Existing Landfill Service: Repi Landfill

One potential solution to control landfill spillover in AAA's emerging regulatory environment is a landfill tax. This tax could be levied by weight, volume, or toxicity of contaminants, and the revenue could be used to maintain an ecologically sound waste management system in the city. AAA's primary landfill, the Repi Landfill, and a newer landfill and related transfer stations, are under construction.

In Ethiopia, each urban administration shall, in conformity with federal environmental standards, ensure that solid waste disposal sites are adequately constructed and properly used.[182] Each administration must ensure, subject to environmental auditing,[183] that all new solid waste disposal site construction and modification has undertaken an Environmental Impact Assessment (EIA).[184]

The Repi Landfill is under the ownership and administration of the Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO).[185] It is thirty-six hectares in size and is in the southwestern part of AAA's jurisdiction, in Nifas-Silk-Lafto Kifile ketema. It is the first landfill in Addis Abba, and it has been in use since 1968.[186] Although it is supposed to use a weighbridge to weigh

180 Gebregiorgs, *supra* note 2, at 25; Gebregiorgs, *supra* note 19, at 26–29, 41.

181 Each sector is expected to notify AABFED of its revenue sources, which are to be automatically earmarked from the retained revenue. Interview with Yirgalem Eshetu, *supra* note 28. AACAA has started to give notification to all concerned organs. Interview with Tadele Demeko, *supra* note 144.

182 SWMP, *supra* note 22, at art. 14(1).

183 *Id.* at art. 14(3).

184 *Id.*

185 Interview with Alemayehu Neme, *supra* note 98.

186 SIAKDSCRP, *supra* note 33, at 9–11.

incoming waste between the transfer stations and disposal site, due to technical problems with its weighbridge the solid waste weight is currently measured based on volume, which does not guarantee accuracy.[187]

The Repi Landfill is generating pollution. It is a substandard, open air, saturated dump without any effluent treatment or drainage system.[188] Also, since it does not separate municipal and hazardous waste, these wastes are comingled in their disposal.[189] Even though the waste is supposed to be spread, compacted, and covered with soil, the present method of waste disposal is crude, open-dumping: hauling the wastes by truck, spreading and levelling by bulldozer, and compacting by compactor and bulldozer.[190] There is no daily covering with soil, no leachate containment or treatment, no rainwater drain-off, no odor or vector control, no liners, and no gas ventilation.[191] Since the proper treatment for the waste is not followed at the Repi Landfill, it is nearly impossible to control its spill-over.[192]

In part, because of these pollution problems, the AAA is closing and reclaiming the Repi Landfill.[193] At the time of this writing, nineteen hectares of the landfill closed, seven hectares have been given to Cambridge Industries Ltd. Repi Waste Energy, two hectares were allotted to Repi Transfer station, and the remaining eight hectares will be closed soon.[194] Moreover, since AAA installed a landfill gas extraction and burning system that generates bio-gas-based energy, the landfill has reduced twenty-five to thirty percent of

---

187 AAEMSORP, *supra* note 39, at arts. 58(2), -(4), -(7); interview with Alemayehu Neme, *supra* note 98; interview with Ephrem Sisay, *supra* note 144.

188 Rio+20, *supra* note 33, at 64; SIAKDSCRP, *supra* note 33, at 4–10; interview with Alemayehu Neme, *supra* note 98; interview with Ephrem Sisay, *supra* note 144; Researcher's Video Record-Based Observation of Repi Landfill, Addis Ababa, Ethiopia (Apr. 16, 2014) (on file with author).

189 SIAKDSCRP, *supra* note 33, at 10; interview with Alemayehu Neme, *supra* note 98; interview with Ephrem Sisay, *supra* note 144; group discussion with Nega Fantahun, *supra* note 98; interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, *supra* note 144.

190 Interview with Ephrem Sisay, *supra* note 144; SIAKDSCRP, *supra* note 33, at 10.

191 Interview with Ephrem Sisay, *supra* note 144; SIAKDSCRP, *supra* note 33, at 10.

192 Interview with Ephrem Sisay, *supra* note 144; SIAKDSCRP, *supra* note 33, at 10.

193 Interview with Alemayehu Neme, *supra* note 98; SIAKDSCRP, *supra* note 33, at 5, 47.

194 Interview with Alemayehu Neme, *supra* note 98; SIAKDSCRP, *supra* note 33, at 5, 47.

its carbon emission.[195] This gas extraction, burning, and generation of bio-gas energy has fulfilled the validity, certification, and verification stages of the Clean Development Mechanism-based carbon trading registration of the UNFCCC; and the landfill will, in due course, provide carbon credit.[196]

B. Upcoming Landfill and Transfer Stations

Subject to EIA study approval by the MEFCCE, the AAA is constructing the Sendafa Landfill with five different solid waste cells, along with the Repi, Akaki, and Bole Arabsa Transfer Stations.[197] The Sendafa Landfill is a 136 hectare modern landfill with a twenty-year use period[198] that may be prolonged through the AASWRDPO's Reduce, Reuse, Recycle, and Recover strategy.[199] Since the AAA is within the state of Oromia, which has a special interest in its social services,[200] the Sendafa landfill and feeder transfer stations will provide service to eight special zones in the state.[201] While the existing solid waste treatment and disposal is environmentally unfriendly, this upcoming landfill and the transfer stations are promising.

Another alternative to ameliorate pollution from solid waste would be private landfill services. Currently, there are no private landfills in AAA's jurisdiction. The opportunity for PPPs in expanding landfill services may be a viable option for the AAA to pursue. In effect,

---

195 The gas extraction and burning system includes gas monitoring technology that records carbon emissions from the process. COMMUNICATION AFFAIRS BUREAU OF ADDIS ABABA ADMIN., ANNUAL BOOK 150 (2014).

196 *Id*.; group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98. Some 25%–30% of carbon emissions are reduced when organic solid waste (methane) is burned and bio-gas-based energy is generated than when it is directly released into the atmosphere. Interview with Tedros Abrha Weldemichael, Chemist, Sheba Leather Factory Production Manager, Mekelle, Eth. (Apr. 9, 2016).

197 Group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98; interview with Getachew Belachew, Envtl. Impact Assessment Version Officer, Addis Ababa City Gov. Envtl Protection Authority, Addis Ababa, Eth. (Dec. 28, 2015); interview with Muhammed Ibrahim, Vice Head & Envtl. Protection Core Process Leader, Oromia Rural Land & Envtl. Protection Bureau, Addis Ababa, Eth. (June 27, 2014).

198 Interview with Ephrem Sisay, *supra* note 144; interview with Alemayehu Neme, *supra* note 98.

199 Interview with Alemayehu Neme, *supra* note 98.

200 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 49 (5).

201 Interview with Alemayehu Neme, *supra* note 98.

public landfill services may, through different participatory or transferring methods, be sold to private investors.[202]

As for landfill taxes, private solid waste collecting organizations deposit a 4 ETB per 1 m^3 landfill charge directly in the Commercial Bank of Ethiopia.[203] This depositing structure could make the administration of landfill taxes in the future more feasible.

IV
SEWAGE SLUDGE, SEWER, AND SLUDGE CAKE MANAGEMENT

A. Septic Tank and Latrine Sewage Sludge Dislodging Services

Sewage from septic tanks and latrines continue to pollute groundwater in AAA, and the patchwork of public and private sludge services creates a situation where many household's sludge is not pumped out in a timely manner. Most liquid waste in AAA is handled by a PPP-based sludge dislodging service.[204] Sludge collected from septic tanks or latrines must be capable of being pumped,[205] and the maximum accessible distance between the cesspool and the vacuum truck must not be more than forty meters.[206]

The AAWSA has a special mandate that allows sludge dislodging charges for the use of sludge using vacuum trucks.[207] Previously, the AAWSA delivered sludge dislodging services to households for 176 ETB and 500 ETB for institutions per trip. Now, while it provides highly subsidized sludge dislodging service to households, it has handed over sludge dislodging services for institutions to private partners.[208] And while there is technically a feasible sewer service

---

202 AAWMCDR, *supra* note 22, at art. 17(1).

203 The bank account number is posted in the compound of AACAA. Group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98; interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, *supra* note 144.

204 Interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100; interview with Solomon Tafese, Addis Ababa Akaki-Kaliti Sub-City Water & Sewerage Manager, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (June 17, 2014).

205 The Addis Ababa Water Supply and Sewerage Disposal Services Regulations. Article 39(1)(b), Proclamation No. 5/1995 (Repealing) Regulations, No. 31/2002, Neg. Gaz., Year 5, No. 1 [hereinafter AAWSSDSRRR].

206 *Id.* at art. 39(1)(a).

207 AAWSARP, *supra* note 89, at art. 16(2)(a); AAWSSDSRRR, *supra* note 205, at art. 39(1).

208 Interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100; interview with Gemila Mohammed, Waste Water Treatment and Re-use Process

provision available to households, the AAWSA does not provide sludge dislodging services for them.[209] The eligible customers of AAWSA are getting sludge dislodging service within one to four days.[210]

When AAWSA faces an extra demand for its sludge dislodging service, it bargains with its private partners. For instance, in 2014 it collected 176 ETB from its customers and outsourced the extra-load to private sludge dislodging service providers at a peak rate of 600 ETB per trip.[211]

The AAWSA may invite, encourage, license, and supervise private investors to participate in the vacuum trucks dislodging service,[212] and its board determines the conditions to be followed in a PPP agreement of service.[213] Subject to environmentally conscious contracts with the AAWSA, private sludge dislodging service providers committed to using the waste water treatment plants of the AAWSA are emerging.[214]

On average, each private sludge-dislodging car services septic tanks or latrines four times a day.[215] The private service's sludge dislodging service fee is based on the distance (kilometers) to and

---

Owner, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Jan. 4, 2016); interview with Nuri Muhammed, Waste Water Treatment Case Manager, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth., (Apr. 3, 2014 & Dec. 25, 2015); interview with Tadese Eshete, Kaliti Waste Water Treatment Plant Supervisor, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Mar. 28, 2014); interview with Tilahun Yimer, Kotebe Waste Water Treatment Plant Deputy Case Manager, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Dec. 25, 2015); interview with Solomon Tafese, *supra* note 204.

209 Addis Ababa Water & Sewerage Authority, Sewer Service Delivery Contract Format § 1.3 [hereinafter AAWSA SSDCF]; interview with Andargachew Getachew, *supra* note 78.

210 Previously, sludge dislodging service customers were subjected to a much longer waiting period. Addis Ababa Water and Sewerage Authority, Waste Water Treatment and Reuse Sub-Process Annual Report (2015) at 2 [hereinafter AAWSA WWTRSP AR]; interview with Gemila Mohammed, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208.

211 Effluent Tax Focus Group Discussion, Addis Ababa Eth. (June 28, 2014); interview with Nega Getahun, *supra* note 100; interview with Solomon Tafese, *supra* note 204.

212 AAWSARP, *supra* note 89, at art. 16(2)(b).

213 AAWSSDSRRR, *supra* note 205, at art. 39(2); AAWMCDR, *supra* note 22, at art. 20(3).

214 Addis Ababa Water & Sewerage Authority, Private Sludge Dislodging Service Provision Contract Format [hereinafter AAWSA PSDSPCF]; interview with Gemila Mohammed, *supra* note 208.

215 Interview with Gemila Mohammed, *supra* note 208.

from the service site, and is calculated with the prevailing market rate. On average, the charge for each trip for both households and institutions is between 800 and 1,500 ETB.[216] Since septic pump-out trucks do not access all areas within the AAA's jurisdiction, to service new high-volume customers, sewage from septic tanks and latrines continue to pollute groundwater.[217] Thus, there is only a partially effective PPP-based sludge dislodging service since the PPP fails to provide affordable service in the entire AAA jurisdictional area.

The AAWSA has eight sludge dislodging service payment branches to facilitate the sludge dislodging charge,[218] and its customers register and pay a cash receipt service charge that is voucher-based at their respective branch.[219] Also, adhering to contract law,[220] the payment for the sludge dislodging service charge is taken simultaneously with the service.

B. Sewer Service[221]

The AAWSA has a special mandate for sewerage system use.[222] Any person (from households to industries) who wants to use the sewer system must conform to federal effluent standards and get a license from the AAWSA.[223] The AAWSA facilitates the issuance of sewer permits in its eight branches, a service that is subject to contractual agreement and annual renewal.[224] Upon an applicant's receipt of a sewer system license, the AAWSA initiates sewer installation within three meters of the boundary of the applicant.[225]

---

216 Interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100; interview with Solomon Tafese, *supra* note 204.

217 ESIA WWTPSLER KC, *supra* note 33, at xii, 260.

218 AAWSSDSRRR, *supra* note 205; Gebregiorgs, *supra* note 2, at 33; Gebregiorgs, *supra* note 19, at 32–41.

219 Interview with Gemila Mohammed, *supra* note 208.

220 Civil Code of the Empire of Ethiopia Proclamation. Art. 2278, Proclamation No. 165/1960, Negarit Gazetta, Year 19, No. 2.

221 *See* the definition of "sewerage service" in AAWSARP, *supra* note 89, at art. 2(21) ("Sewerage Service" means the collection, treatment, and disposal of waste water and sewage).

222 *Id.* at art. 16(1).

223 AAEPCR, *supra* note 76, at arts.7(1)–(2); interview with Zelalem Ketema, Sewer System Monitoring Case Manager, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Jan. 4, 2016); interview with Andargachew Getachew, *supra* note 78.

224 AAWSA SSDCF, *supra* note 209, at 10.

225 AAWSSDSRRR, *supra* note 205, at arts. 27(1)–28(1); AAWSA SSDCF, *supra* note 209, §§ 1.1–2.2; interview with Gemila Mohammed, *supra* note 208; interview with Zelalem Ketema, *supra* note 223; interview with Tadese Eshete, *supra* note 208.

The applicant is responsible for constructing waste water facilities and pre-treatment facilities (e.g., conveyance and bulk waste catchment structures).[226] Then the water facilities and sewer line[227] are installed and connected—either where the authority compels the proprietor, or at his or her request.[228] The cost for the construction and installation of the waste water facilities, within the property line up to the public sewer system, is covered by the proprietor.[229]

Unless the AAWSA permits otherwise, the connection to the public sewerage system shall be installed by its own crew.[230] Subject to the Waste Water Discharge Standard, the AAWSA shall determine the volume of the waste water discharged into the sewerage system.[231] Since its waste water treatment plants are dependent on natural processes, the AAWSA issues permits to industries only if their effluent physicochemical properties conform to the Federal Effluent Standard of Ethiopia.[232] Despite the presence of an operating sewer use permit system, there are still some uncontrolled and illegal connections of sewage to sewer lines.[233] Even so, the existence of the sewer use permit system is functioning and able to be utilized by those who wish to conform to the law.

In AAA, there are the Kaliti, Akaki and Eastern Sewage Catchments; and, except for a few condominium sewer packages, the centralized sewer systems are available only in the Kaliti

---

226 AAWSSDSRRR, *supra* note 205, at arts. 27(3), 28(2), 31; AAWSA SSDCF, *supra* note 209, § 2.3; AAWSARP, *supra* note 89, at art. 2(24) ("Waste Water Facility" means any public or private arrangement, works, structure, appliance or equipment which is made, constructed, installed, or used for the removal, storage, transportation, treatment, disposal, or discharge of any waste water).

227 AAWSARP, *supra* note 89, at art. 2(19) ("Sewer line" means a series of sewers, including the manhole, if any, along the sewer).

228 AAWSSDSRRR, *supra* note 205, at arts. 26–28(3); AAWSA SSDCF, *supra* note 209, § 1.3.

229 AAWSSDSRRR, *supra* note 205, at art. 28(2); AAWSA SSDCF, *supra* note 209, § 1.2.

230 AAWSSDSRRR, *supra* note 205, at art. 29; AAWSA SSDCF, *supra* note 209, §§ 3.1–3.3.

231 AAWSSDSRRR, *supra* note 205, at arts. 32–33.

232 Effluent Tax Focus Group Discussion, *supra* note 211; interview with Gemal Rashid, *supra* note 100; interview with Tadese Eshete, *supra* note 208; interview with Nega Getahun, *supra* note 100; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208; interview with Zelalem Ketema, *supra* note 223.

233 ESIA WWTPSLER KC, *supra* note 33, at xii.

Catchment.[234] The sewer service is limited to municipal waste that encompasses toilet, shower, and kitchen waste water.[235] Solid materials, oil, petrol, sludge cake, and rain water are strictly prohibited.[236] The sewer service in the AAA, which operates on slope-based gravitation, accounts for only ten percent of the total necessary sewer coverage. Because of the high volume of sewage waste, it is vulnerable to ruptures.[237] Thus, the high volume of sewage waste, and susceptibility to ruptures creates insufficient sewer service in the Kaliti Catchment.

AAWSA sewer customers must pay sewer service fees either by aggregating the cost of service and connection charges in a block payment; or by paying through a six month's voucher-based payment of a nominal sewer connection charge.[238] The sewer service charge has not fully internalized the external costs of operating the sewer service, such as environmental contamination from sewer rupture.[239]

C. Sewer and Sludge-Based Waste Water Treatment and Disposal

1. Existing Waste Water Treatment and Disposal

The main objective of the AAWSA Waste Water Treatment and Re-use Sub-Process (WWT RUSP) is the treatment and disposal of

234 Effluent Tax Focus Group Discussion, *supra* note 211; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Tesfalem Yifa, Sewerage Dep't: Construction Supervision & Contract Admin. Team Leader, Water, Sanitation Rehabilitation & Dev Project Off. of Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Mar. 22, 2016).

235 Interview with Gemila Mohammed, *supra* note 208.

236 AAWSA SSDCF, *supra* note 209, §§ 2.1, 7.4; AAEPCR, *supra* note 76, at art. 7; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Zelalem Ketema, *supra* note 223; interview with Solomon Tafese, *supra* note 204; interview with Andargachew Getachew, *supra* note 78.

237 Effluent Tax Focus Group Discussion, *supra* note 211; ESIA WWTPSLER KC, *supra* note 33, at 160; interview with Gemal Rashid, *supra* note 100; interview with Tesfaye Werede, Supervisor of Sewerage System, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Apr. 3, 2014); interview with Tesfaw Ashagrie, Water Supply & Sanitation Directorate: Envtl. Specialist & Team Leader, Ministry of Water, Irrigation & Electricity of Ethiopia, Addis Ababa, Eth. (June 19, 2014); interview with Zelalem Ketema, *supra* note 223.

238 On average the sewer connection charge is 3,000 to 4,000 ETB. Effluent Tax Focus Group Discussion, *supra* note 211; interview with Gemal Rashid, *supra* note 100; interview with Tesfaye Werede, *supra* note 237; interview with Tesfaw Ashagrie, *supra* note 237; interview with Zelalem Ketema, *supra* note 223; interview with Tadese Eshete, *supra* note 208.

239 AAWSSDSRRR, *supra* note 205; AAWSA SSDCF, *supra* note 209, § 5; Gebregiorgs, *supra* note 2, at 31; Gebregiorgs, *supra* note 19, at 32–40.

sewer waste, sludge-based waste water, and sludge cake.[240] At the time of this writing, the AAA is working to expand waste water treatment services by planning and constructing gravitation, primary, and secondary biological-based[241] treatment plants in Kaliti, Kotebe, Gelan, Mikililand, Ayat Gerji, Bole Homes, and Chefe.[242] The existing waste water treatment and disposal structures in the sub-cities of Kaliti, Kotebe, Gelan, Mikililand, Ayat Gerji, and Bole Homes are described in detail, below.

Each day an average of 16,020 to 19,020 m^3 of sewer system-based waste water and 19,000 m^3 of sludge dislodging-based waste water is treated and disposed of in the natural stabilization pond system of the Kaliti and Kotebe Waste Water Treatment Plants.[243] The Kaliti Waste Water Treatment and Re-use Sub-Process (WWT RUSP) is a lagoon treatment system built in the late 1970s. The system consists of inlet screens and grit chambers, two settling chambers, two rectangular pond systems, slant parallel pond systems, and eight drying beds.[244] The system treats and disposes of sludge and sewer-based waste water, subject to manual intake measurement.[245] Even though it is currently operating beyond its design capacity, the system is not able to satisfy the needs of the city.[246]

Sewage enters into the Kaliti WWT RUSP by a gravity sanitary sewer piping system.[247] It is first subject to preliminary screening and

---

240 AAWSA WWTRSP AR, *supra* note 210, at 1; interview with Gemal Rashid, *supra* note 100; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Tilahun Yimer, *supra* note 208 (stating that waste water constitutes 90% of the sludge transported to the waste water treatment plants).

241 AAWSA WWTRSP AR, *supra* note 210, at 1; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208. It is important to note that they have neither tertiary nor chemical treatment schemes.

242 AAWSA WWTRSP AR, *supra* note 210, at 1.

243 *Id.*; interview with Gemal Rashid, *supra* note 100; interview with Gemila Mohammed, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208.

244 ESIA WWTPSLER KC, *supra* note 33, at 24–26.

245 At the time of this writing, the flow meter of the Kaliti WWT RUSP lagoon was not operating. Interview with Tadese Eshete, *supra* note 208; interview with Getachew Demeke, Kaliti Waste Water Treatment Plant Biologist, Addis Ababa Water and Sewerage Authority, Addis Ababa, Eth. (Mar. 28, 2014); interview with Tesfalem Yifa, *supra* note 234.

246 ESIA WWTPSLER KC, *supra* note 33, at xii, 24; AAWSA WWTRSP AR, *supra* note 210; interview with Tadese Eshete, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Getachew Demeke, *supra* note 245.

247 ESIA WWTPSLER KC, *supra* note 33, at 25.

sedimentation. The sewage then flows to the distributing cell which moves the waste water into parallel "A" and "B" stabilization and oxidation ponds.[248] The treatment steps are displacement-based.[249] At the maximum flow rate, following thirty days of hydraulic retention time in the stabilization ponds, the treated waste water that resides in A4 and B4 maturation ponds[250] is released to the redistributing and screw pump. While there, physical, chemical, and biological laboratory tests are undertaken. Later, if the treated waste conforms to environmental standards, it is directly discharged to Small Akaki River. If the waste water does not conform to environmental standards, it is sucked back against gravity to the stabilization ponds for retreatment.[251]

In addition to the Kaliti Waste-Water Treatment Plant Environmental Laboratory Center's regular appraisal, the AAEPA has the duty to sample the waste water. The waste water samples then undergo environmental standard-based laboratory evaluation and monitoring.[252] In practice, since the AAWSA does not have a full-fledged laboratory, a sample must be taken from each waste water treatment plant and tested in the AAEPA's laboratory.[253] Despite the AAWSA's recent plan to test ninety biological and physicochemical parameters, the AAWSA could only test sixty-six waste water samples.[254] Consequently, the AAWSA's poor performance in this sample-based test of waste water treatment has seriously affected the waste water treatment performance.[255]

The thirty-day detention period was designed to process 7,500 m^3 per day capacity, but its current intake is about 10,000 m^3 per day.[256]

---

248 ESIA WWTPSLER KC, *supra* note 33, at 28, tbl.3.3; interview with Getachew Demeke, *supra* note 245.

249 Interview with Getachew Demeke, *supra* note 245.

250 *See* ESIA WWTPSLER KC, *supra* note 33, at 26; interview with Getachew Demeke, *supra* note 245; interview with Tsigereda Tafese, Kaliti Waste Water Treatment Plant Chemist, Addis Ababa Water and Sewerage Authority, Addis Ababa, Eth. (Mar. 28, 2014).

251 *See* ESIA WWTPSLER KC, *supra* note 33, at 26; interview with Tsigereda Tafese, *supra* note 250.

252 Interview with Getachew Demeke, *supra* note 245; interview with Tsigereda Tafese, *supra* note 250.

253 AAWSA WWTRSP AR, *supra* note 210, at 5–7.

254 *Id.* at 2.

255 *Id.* at 5–7.

256 Interview with Getachew Demeke, *supra* note 245; interview with Tesfalem Yifa, *supra* note 234.

This discrepancy between designed-for and actual sewage at the Kaliti WWT RUSP diminishes the plant's proper functioning,[257] which increases the risk of premature discharge of waste water into the river.

Similar to the Kaliti WWT RUSP, the natural stabilization and lab evaluation process are utilized at the Kotebe WWT RUSP. The Kotebe WWT RUSP was established in 2000.[258] It treats 2,000 m^3 of waste water per day and disposes of it in the Great Akaki River.[259]

The WWT RUSP plant operations at Gelan, Mikililand, Ayat, Gerji, and Bole Homes WWT RUSP face similar issues with premature waste water discharge as the Kaliti and Kotebe plants. Each plant discharges treated (and under-treated) waste in the Akaki River.[260] The AAWSA's 2015 Waste Water Treatment and Re-use Sub-Process Annual Report, revealed the underperformance of the waste water treatment and disposal plants.[261] The underperformance of these plants was identified by the AAWSA to be resultant to capacity issues with the natural pond treatment and disposal processes. Specifically, while the waste water that joins Kaliti, Gerji, and Kotebe is above their respective operational capacities, the waste water that joins Mikililand, Gelan and Ayat is below their potential capacities.[262] Thus, the inability of the sewer and sludge dislodging system to capture the expected amount of waste water appears to be the primary reason why the waste water treatment and disposal plants are underperforming.[263]

---

257 ESIA WWTPSLER KC, *supra* note 33, at 18 (reporting that waste water escapes from broken sewer pipes and into streams at various locations).

258 Interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208.

259 AAWSA WWTRSP AR, *supra* note 210, at 1; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208; Video Recording: Researcher's Video Record-Based Observation of Kotebe Waste Water Treatment Plant, Addis Ababa, Eth. (Dec. 25, 2015) (on file with author).

260 Gelan, Mikililand, Ayat, Gerji, and Bole Homes WWT RUSP treat 3000, 750, 1000, 1500, and 400 m^3 of sewer-based waste water, respectively, per day. AAWSA WWTRSP AR, *supra* note 210; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Tilahun Yimer, *supra* note 208.

261 AAWSA WWTRSP AR, *supra* note 210, at 1.

262 *Id.* at 1.

263 *Id.* at 7.

2. Waste Water Treatment and Reuse Sub-Processes Under Construction

The AAA is currently developing a short-term solution for higher density residential areas that lack access to sewer systems serviced by waste water treatment plants. This solution consists of installing decentralized waste water treatment packages for condominiums in areas lacking mainline sewer connection. The decentralized system can be used until condominium developments are connected to main sewer lines, at which time the temporary system will be dismantled and reinstalled in another area lacking access to a sewer system.[264]

Another AAA project is the construction of new, and improvement of existing, wastewater treatment systems throughout the city. These projects are organized by phases of implementation and completion. First, the Chefe and Koyifechi WWT RUSP plants are in their final stages of construction, and have waste water treatment capacities of 12,500 and 27,000 m^3 per day, respectively.[265] Next, the commencement of the Kaliti Waste Water Treatment Plant Expansion and Rehabilitation as well as the Sewer Lines Expansion of Kaliti Sewage Catchment began in 2012.[266] The AAA has planned two phases of completion for the Kaliti project, which is expected to run through 2030. To achieve the Kaliti project, the AAA is committed to developing centralized and integrated sewer collection systems, and water treatment plants with an upflow anaerobic sludge blanket reactor based on high-rate trickling filtration systems.[267]

With the first phase of the Kaliti project underway, the AAWSA began a $100,000 project to renovate and enlarge the Kaliti WWT RUSP from 7,600 to 100,000 m^3 per day.[268] The AAWSA's Kaliti plant expansion project is expected to increase the AAA's sewer

264 Interview with Tesfalem Yifa, *supra* note 234.

265 AAWSA WWTRSP AR, *supra* note 210; interview with Nuri Muhammed, *supra* note 208; interview with Gululat Teshome, Envtl. Team Leader, Water, Sanitation Rehabilitation & Dev. Project Off. of Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Mar. 21, 2016). Chefe WWT RUSP is accompanied by a twenty-two km sewer line development. Interview with Tesfalem Yifa, *supra* note 234.

266 ESIA WWTPSLER KC, *supra* note 33, at 17; interview with Tesfalem Yifa, *supra* note 234.

267 ESIA WWTPSLER KC, *supra* note 33, at 28–31, 160; interview with Tesfalem Yifa, *supra* note 237. It is electromechanical.

268 Interview with Gemal Rashid, *supra* note 100; interview with Tesfalem Yifa, *supra* note 234; interview with Gemila Mohammed, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Getachew Demeke, *supra* note 245; Effluent Tax Focus Group Discussion, *supra* note 211.

service area from only reaching ten percent of residents in the Kaliti service area to sixty percent.[269] In the second phase, a duplicate of the improved Kaliti WWT RUSP will be constructed adjacent to the Kaliti plant. This additional plant is projected to add 100,000 m^3 of waste water processing.[270] Together, these plants will result in a total of 200,000 m^3 of waste water processing per day.[271] Next, the planned expansion of over eighteen kilometers of main, secondary, and tertiary sewer lines, constructed to improve waste water transport to and within the plants, is under way.[272] Additionally, a thirty-kilometer and an eighty-kilometer sewer line was set up in the Kaliti Catchment in 2015 and 2016, and the government has already advertised a bid for the development of sewers in the other catchments.[273] Thus, while the existing sludge and sewer-based waste water treatment and disposal systems present significant environmental concerns, e.g. due to the premature release of undertreated waste water and issues with operational capacity, the Kaliti plant expansion project is an example of the AAA proactively planning to provide better sewer service to residents, while employing more environmentally sound technologies for waste water treatment.

D. Sludge Cake Treatment and Disposal

All forms of sludge should undergo treatment before reuse or discharge into the natural ecosystem.[274] At the Kaliti and Kotebe Waste Water Treatment Plants, operators dispose of sludge in a non-compact or land-intensive natural drying bed system.[275] The sludge treatment process at Kaliti WWT RUSP begins with the arrival of

---

269 Interview with Gemal Rashid, *supra* note 100; interview with Tesfalem Yifa, *supra* note 234; interview with Gemila Mohammed, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Getachew Demeke, *supra* note 245; Effluent Tax Focus Group Discussion, *supra* note 211.

270 ESIA WWTPSLER KC, *supra* note 33, at 33; interview with Tesfalem Yifa, *supra* note 234.

271 ESIA WWTPSLER KC, *supra* note 33, at 33; interview with Tesfalem Yifa, *supra* note 234.

272 ESIA WWTPSLER KC, *supra* note 33, at 19; interview with Tesfalem Yifa, *supra* note 234.

273 Interview with Tesfalem Yifa, *supra* note 234.

274 ESIA WWTPSLER KC, *supra* note 33, at 42.

275 AAWSA PSDSPCF, *supra* note 214, § 7; interview with Nuri Muhammed, *supra* note 208; interview with Nega Getahun, *supra* note 100; interview with Tadese Eshete, *supra* note 208; interview with Tilahun Yimer, *supra* note 208.

trucked sludge from service areas at the sludge lagoons and drying beds of the plant. The lagoons and drying beds were constructed in 1999 with a treatment capacity of 110,000 m^3 per year of sludge.[276] The truck sludge is dislodged in 8 m^3 skips that screen for foreign elements in the sludge and reduces erosion. While the supernatant is decanted from the surface and returned to the plant, the liquid evaporates in the drying ponds of the lagoons, and the sludge cake is removed manually.[277] However, in practice, this process of drying and removal is not effectively followed and liquid waste from the drying beds at the plant is being released directly into the Small Akaki River, instead of being returned to the plant.[278]

The water treatment plants are open for sixteen hours a day, without any volume limitation, to all sludge dislodging service providers.[279] Despite a limited drying bed system, solar radiation dries the sludge cake in an average of two months.[280] The sludge cake then goes to restricted fields without any treatment and reuse.[281] In 2015, the AAWSA, with its limited sludge cake managing laborers and loaders, manually disposed of 91,200 m^2 of sludge cake.[282] The proposed Kaliti WWT RUSP plant retrofitting and expansion project includes provisions to rehabilitate the existing sludge drying lagoons to treat digested sludge.

Although the sludge cake treatment and the disposal charge plays an important role in covering some of the costs of the service, confusion remains regarding who must pay the charge.[283] As stated previously, private sludge dislodging service providers are contractually bound to pay a cash receipt voucher-based nominal

276 ESIA WWTPSLER KC, *supra* note 33, at 26.

277 *Id.* at 25; interview with Getachew Demeke, *supra* note 245 (stating that the sludge cake can measure around 7 meters in depth).

278 ESIA WWTPSLER KC, *supra* note 33, at 18; Video Recording: Researcher's Video Record-Based Observation of Kaliti Waste Water Treatment Plant, Addis Ababa, Eth. (Mar. 28, 2014) (on file with author).

279 ESIA WWTPSLER KC, *supra* note 33.

280 Interview with Tilahun Yimer, *supra* note 208; interview with Getachew Demeke, *supra* note 245.

281 Effluent Tax Focus Group Discussion, *supra* note 211; interview with Nega Getahun, *supra* note 100; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Getachew Demeke, *supra* note 245; interview with Tilahun Yimer, *supra* note 208.

282 AAWSA WWTRSP AR, *supra* note 210, at 1–5.

283 Interview with Tilahun Yimer, *supra* note 208; interview with Getachew Demeke, *supra* note 245.

charge of 200 ETB annually per vehicle to the AAWSA.[284] By contrast, the public sludge dislodging vehicles are not subject to payment, although the public service providers collect a charge from service customers.[285] Thus, while there is a sludge cake treatment and disposal charging system for privately dislodged sludge, there does not appear to be one for publicly dislodged sludge. For this reason, only the private sludge dislodging service providers pay in this instance.

V
INDUSTRIAL EFFLUENT TREATMENT AND DISPOSAL

While few industries dispose of their treated effluents into the sewer system, the majority of industries dispose untreated effluent into water bodies.[286] This is directly at odds with an industrial water user's obligation to install and use a waste treatment method for treating pollution. Industrial users may only discharge the type and volume of treated waste permitted by law.[287] Few industries actually install and use waste water pre-treatment facilities.[288] In an assessment undertaken in fifty-three industries by the MEFCCE, sixty percent of industries have no treatment technology, and forty percent

284 AAWSA PSDSPCF, *supra* note 214, § 4; AAWSA Board Minute no. 208/1999; interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100; interview with Solomon Tafese, *supra* note 204; interview with Tadese Eshete, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208; interview with Gemila Mohammed, *supra* note 208.

285 AAWSSDSRRR, *supra* note 205, at art. 39(1).

286 Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No. 64902, Federal First Instance Court, Feb. 21, 1999); Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No. 62904, Federal High Court, June 12, 2008); Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No. 51052, Federal Supreme Court Cassation Division, Dec. 3, 2006); MEFCCE AIPEESI, *supra* note 33; MINISTRY OF INDUSTRY OF ETH., SUMMARY OF REVIEW WORKS ON ENVIRONMENTAL MANAGEMENT PRACTICES OF SELECTED INDUSTRIES IN ETHIOPIA (2014) [hereinafter MIE SRWEMPSIE]; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; interview with Adugna Mengste, *supra*, note 58; interview with Zelalem Ketema, *supra* note 223; Researcher's Video Record-Based Observation of Akaki River, Addis Ababa, Eth. (June 17, 2014).

287 EWRMR, *supra* note 71, at arts. 12(1)(a)–(b).

288 Effluent Tax Focus Group Discussion, *supra* note 211; MEFCCE AIPEESI, *supra* note 33; MIE SRWEMPSIE, *supra* note 286; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; interview with Adugna Mengste, *supra*, note 58; interview with Zelalem Ketema, *supra* note 223.

have treatment technology that lacks necessary funding, human resources, or chemicals for testing.[289] Thus, besides a few exceptions, the existing industrial effluent treatment and disposal system results in significant pollution to natural water bodies.

A. Federal Effluent Permit System

Prior to issuing an investment, trade, or operating license for any project, a licensing agency should ensure the review of the Environmental Impact Assessment (EIA) study by the concerned organization.[290] No person shall release waste[291] into water resources without having obtained a permit from the supervising body.[292] Applications for the discharge of any treated effluent into surface or ground water must be made to the supervising body.[293] In deciding whether to grant or refuse a permit, the body must consider effluent and stream standards.[294]

The water use permit application process has several procedural steps. First, water use permit applications to the MWIEE must contain basic information such as the location, intended place of use, volume, and method of use.[295] Next, MWIEE must issue the permit within sixty days after receipt of the application in instances where the water use proposed does not infringe on any person's legitimate interests or result in harmful effects on the water resource and the environment.[296] Although, at the moment, the MWIEE has not yet developed an effluent permit format,[297] it must state the detailed information, conditions, and restrictions for effluent generated by the proposed use in the permit form. If the MWIEE rejects an application, it must

289 MEFCCE AIPEESI, *supra* note 33, at 19.

290 FEIAP, *supra* note 60, at art. 3(3); AAEIAR, *supra* note 78, at art. 5(2).

291 FEIAP, *supra* note 60, at art. 3(3); AAEIAR, *supra* note 78, at art. 5(2).

292 EFWRMP, *supra* note 69, at art. 11(1) (d); *see also id.* at art. (2)(7) (defining "supervising body" as the Ministry where it pertains to water resources at central level, or any organization delegated by the Ministry pursuant to Article 8(2) of the proclamation).

293 EFWRMP, *supra* note 69, at arts. 11(1), 13.

294 EWRMR, *supra* note 71, at art. 11(2); FSIPCE, *supra* note 58.

295 EWRMR, *supra* note 71, at arts. 3(a)–(g).

296 EFWRMP, *supra* note 69, at arts. 13(2), 14(1)(a)–(b); *see also id.* at arts. 4, 11.

297 Even though an effluent permission format was proposed by the Licensing and Monitoring Directorate, it was sidelined due to overlap and conflict of interest. Interview with Kifle Alemayehu, *supra* note 58; interview with Zewdu Tefera, *supra* note 63; interview with Tesfaw Ashagrie, *supra* note 237; interview with Zebider Alemneh, Water Supply & Sanitation Directorate: Environmentalist, Ministry of Water, Irrigation & Electricity of Eth., Addis Ababa, Eth. (June 19, 2014).

notify the applicant in writing of the rejection and the reasons for rejection within sixty days after receipt of the application.[298]

As a condition for the permit, the applicant must follow several requirements for waste treatment. Any person discharging treated waste water has an obligation to install and use a waste treatment method, to discharge only the type and volume of treated waste permitted, and to allow the MWIEE to take a treated waste discharge sample at any time.[299] Most industries in AAA currently only use primary treatment technology.

Once issued, a permit holder may seek renewal from the MWIEE at least one month before a permit's expiration date.[300] The MWIEE checks for the permit holder's compliance with the conditions, obligations, and restrictions attached to the permit. Upon verifying compliance, the MWIEE renews a treated waste water discharge permit every two years starting from the date of its issuance.[301] The MWIEE notifies the applicant in writing that the permit is renewed or denied within five days of receiving the renewal application. This decision must be registered and is subject to later variation or rejection.[302] A permit shall be presumed void if it is not renewed within the time limit.[303]

The MWIEE may suspend or revoke a permit at any time when the holder fails to fulfil their obligations.[304] Such modifications can apply to an entire permit or specific parts. The suspension or revocation of treated waste water discharge permits[305] often results from failure to comply with the conditions prescribed in the permit[306] or fraudulent acts by the permit holder at the time of issuance.[307] Subsequently, the MWIEE must register all suspension or revocation decisions.[308]

While the federal water use permitting system mainly operates under the MWIEE, the AAA has developed a parallel permitting

298 EFWRMP, *supra* note 69, at art. 14(3).

299 EWRMR, *supra* note 71, at art. 12(1).

300 EFWRMP, *supra* note 69, at arts. 15(1)–(2); EWRMR, *supra* note 71, at art.13(1).

301 EFWRMP, *supra* note 69, at arts. 15 (1)–(2); EWRMR, *supra* note 71, at art.13(1).

302 EWRMR, *supra* note 71, at arts. 13(3)–(5).

303 EFWRMP, *supra* note 69, at art. 15(3).

304 *Id.* at art. 17.

305 *Id.*; EWRMR, *supra* note 71, at art. 14.

306 EWRMR, *supra* note 71, at art. 14(1)(a).

307 *Id.* at art. 14(2).

308 *Id.* at art. 14(3).

system for the two major rivers in the jurisdiction: the Big Akaki in East Addis Ababa and the Small Akaki in West Addis Ababa. These rivers drain into the Abasamuel lake to the south,[309] which flows to the Awash River.[310] The AAA's Addis Ababa Environmental Protection Authority (AAEPA) was mandated by the MWIEE to consider the negative impact on water resources, prior permits, and stakeholders when someone requests a permit to discharge.[311] The AAA effluent permit system provides a legal framework for application procedures for permits,[312] denying or accepting permits,[313] determining the duration of permits, and the procedures to renew,[314] suspend,[315] or cancel permits.[316] Furthermore, it has laboratory and environmental inspectors that enable it to undertake effluent standard-based inspections[317] and evaluations.[318] Nonetheless, since its effluent audit system is in its infancy,[319] it has a nominal regulatory role when proponents annually renew their trade licenses.[320] Therefore, the AAEPA does not currently have an operating effluent permit system.

B. Effluent Tax Collection System

The inbuilt area of Addis Ababa is located in the Akaki River basin, which is the major tributary of the Awash River basin. The AAA generates about 49,000,000 m^3 of waste water annually, most of which ends up in the rivers and streams flowing through the city.[321] Most of the industries are in the Kaliti catchment and are situated along streams that are currently being used as open sewer channels.[322]

---

309 DPDEOFDRE, *supra*, note 17, at art. 10(7); EFWRMP, *supra* note 69, at art. 8(2); interview with Kifle Alemayehu, *supra* note 58.

310 AFDD/AACG SWMSIR, *supra* note 33, at 4.

311 AAEPCR, *supra* note 76, at arts. 15(4), 16–20.

312 *Id.* at art. 16.

313 *Id.* at art. 17.

314 *Id.* at art. 18.

315 *Id.* at art. 19.

316 *Id.* at art. 20.

317 Interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; interview with Senait Asaminew, *supra* note 78.

318 Interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; interview with Senait Asaminew, *supra* note 78.

319 Interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; MEFCCE AIPEESI, *supra* note 33, at 18.

320 Interview with Senait Asaminew, *supra* note 78.

321 ESIA WWTPSLER KC, *supra* note 33, at 17.

322 *Id.* at 18.

Ethiopian law requires parties to pay an effluent tax for discharge permits and their subsequent renewal, alteration, and cancelation.[323] The MWIEE is authorized to collect these taxes[324] and to mitigate water resource degradation.[325] Permit holders must pay an effluent tax to the MWIEE[326] annually.[327] However, in practice, the effluent tax is not effectively embedded[328] in the law and the MWIEE[329] does not currently have an effective effluent tax collection system.[330]

VI
ADDIS ABABA ADMINISTRATION EMISSION TAX PERMIT SYSTEM

At the federal level, the MEFCCE must formulate and enforce scientific and environmental principle-based gaseous emission standards.[331] The MEFCCE approved air quality standards that specify appropriate air quality levels and emission rates.[332] However, since the MEFCCE has delegated its permit issuance and renewal mandate for industrial, manufacturing, and service delivery organizations to the AAEPA,[333] emission permit and renewal mandates in the AAA fall within the domain of the AAEPA.

Under the MEFCCE, the AAEPA has a duty to issue permits based on the polluter-pays principle and to renew and enforce them in accordance with established gaseous emission standards.[334] When parties request a permit to discharge air pollutants, the AAEPA is expected to consider negative environmental impacts, prior permits, and effects on outside stakeholders.[335] Like the EIA system,[336] the

323 EFWRMP, *supra* note 69, at arts. 20(1)(c)–(d).

324 *Id.* at arts. 20(3)–(4); EWRMR, *supra* note 71, at art. 30.

325 Gebregiorgs, *supra* note 2, at 33; Gebregiorgs, *supra* note 19, at 30–41.

326 EFWRMP, *supra* note 69, at arts. 22(1)–(2); EWRMR, *supra* note 71, at art. 32(1).

327 EWRMR, *supra* note 71, at art. 32(2).

328 Gebregiorgs, *supra* note 2, at 33; Gebregiorgs, *supra* note 19, at 30–41.

329 Because the two major rivers in AAA are tributaries of the transnational Awash River, they are subject to the federal effluent tax collection system. AFDD/AACG SWMSIR, *supra* note 33, at 4.

330 Interview with Kifle Alemayehu, *supra* note 58; interview with Zewdu Tefera, *supra* note 63; interview with Tesfaw Ashagrie, *supra* note 237; interview with Zebider Alemneh, *supra* note 297.

331 FPCP, *supra* note 22, at art. 6(1); PIPCMR, *supra* note 64, at art. 13(1).

332 FPCP, *supra* note 22, at art. 6(1); FSIPCE, *supra* note 58.

333 FDRE EPA L AAEPA, *supra* note 138; FDRE EPA L MTE, *supra* note 138.

334 PIPCMR, *supra* note 64, at arts. 13(2), 14; AAEPCR, *supra* note 76, at art. 15(1).

335 AAEPCR, *supra* note 76, at arts. 15(5)(a)–(c).

AAA's emission permit program provides a legal framework for permit application procedure,[337] granting or rejecting permits,[338] determining the duration of permits, renewing or suspending permits,[339] and cancelling permits.[340] Even though the AAEPA has an air laboratory that enables emission standard-based evaluations, it has no air laboratory experts to analyze the results.[341] Moreover, since the AAEPA has no qualified emission inspectors, emission-based inspections are not conducted.[342] Therefore, the AAEPA does not currently have a functioning emission tax permit system.[343]

CONCLUSION

This research assessed the administrative feasibility of environmental taxes in implementing a polluter-pays principle in the AAA of Ethiopia. In implementing a polluter-pays principle, this research has shown that while solid waste, landfill, sludge, and sewer taxes are, to some extent, administratively feasible to implement, effluent and emission taxes are not. This Article suggests that implementing administratively feasible solid waste, landfill, sludge, sewer, effluent, and emission taxes in the AAA of Ethiopia is contingent upon the realization of fiscal federalism, an increased reliance on environmental expertise, expansion of public-private partnership, as well as the improvement of existing environmental institutions and infrastructures.

---

336 FEIAP, *supra* note 60, at art. 3(3); AAEIAR, *supra* note 78, at art. 5(2).

337 AAEPCR, *supra* note 76, at art. 16.

338 *Id.* at art. 17.

339 *Id.* at arts. 18–19.

340 *Id.* at art. 20.

341 Effluent Tax Focus Group Discussion, *supra* note 211; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; Haileslassie Sebhatu, *supra* note 58; Adugna Mekonnen, *supra* note 58.

342 Interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78.

343 Effluent Tax Focus Group Discussion, *supra* note 211; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; Haileslassie Sebhatu, *supra* note 58; Adugna Mekonnen, *supra* note 58.

Chapter Five:

The Role of Public Interest Litigation in the Achievement of Sustainable Waste Management in Ethiopia

sustainability

MDPI

Article

The Role of Public Interest Litigation in the Achievement of Sustainable Waste Management in Ethiopia †

Merhatbeb Teklemedhn Gebregiorgs [1,2]

[1] Tilburg Law School, Tilburg University, P.O Box 90153 5000 Tilburg, The Netherlands; M.T.Gebregiorgs@tilburguniversity.edu
[2] School of Law, Mekelle University, P.O. Box-231 Mekelle, Ethiopia
† This research is conducted under the affiliation of Tilburg Law School, Tilburg University, Tilburg, The Netherlands; and Mekelle University School of Law, Mekelle, Ethiopia; under the supervision of Professor Dr Jonathan Verschuuren.

Received: 7 October 2018; Accepted: 10 December 2018; Published: 12 December 2018

Abstract: This research assessed the role of public interest litigation in the achievement of sustainable waste management in the Addis Ababa Administration (AAA) of Ethiopia. It employed a single country case-oriented comparative research design, and data triangulation was used to establish the validity of the findings. The research first shows Ethiopia's commitment to sustainable waste management, implementing environmental tax and the command-and-control instruments of the polluter-pays principle and public interest litigation within the context of environmental justice. Secondly, it shows that public interest litigation is one of the innovative techniques in the struggle against waste mismanagement across all legal systems. Thirdly, it demonstrates the potential role of public interest litigation in Ethiopia in encouraging the federal and regional environmental protection and management organs to implement environmental tax and command-and-control instruments. Fourthly, it uncovers that public interest litigation is not fully compatible with the Civil Procedure Code of Ethiopia. Fifthly, it shows the failure of the judiciary system of Ethiopia to accommodate environmental courts and tribunals that flexibly and innovatively adopt public interest litigation. Sixthly, it reveals that, in Ethiopia, the scope of public interest standing is highly restrictive for Civil Society Organizations (CSO). Finally, it implies that the legal viability and administrative feasibility of environmental public interest litigation in Ethiopia is in its infancy, and its crystallization is partly contingent on the cautious review of the Civil Procedure Code and CSO laws and on greening the judiciary system.

Keywords: sustainable waste management; the polluter-pays principle; environmental justice; environmental public interest litigation

1. Introduction

(a) Background of the Research

Environmental justice is one of the goals of sustainable development, and public interest litigation is one of the innovative techniques for its implementation [1,2].

Public interest litigation is described as legal tools that allow individuals, groups and communities to challenge government decisions and activities in a court of law or any other competent body with judicial power for the enforcement of public interest [3].

When there is market failure, states are expected to protect the environment through the use of taxation and the command-and-control instruments of the polluter-pays principle (see details in

Section 2.2). Simultaneously, in seeking to hold states responsible for environmental pollution, public interest litigation could follow either a fundamental rights approach or a duty of care method [4].

Correspondingly, the historical use of public interest litigation within the context of environmental justice shows its potential role in the struggle against waste mismanagement in both common and civil law jurisdictions of developed and developing countries (see details in Section 2.4.2). Thus, the application of public interest litigation in combating unsustainable waste management is not context-specific, and it can be stretched across all legal systems.

As a corollary, it is safe to conclude that the potential role of public interest litigation in the struggle against waste mismanagement is applicable in Ethiopia [5,6].

(b) Statement of the problem

Ethiopia is committed to sustainable waste management (see details in Section 2.1), the polluter-pays principle [7] and public interest litigation within the context of environmental justice [8–10].

Nevertheless, at the moment, Ethiopia in general, and the Addis Ababa Administration (AAA) in particular, has failed to implement the environmental tax and command-and-control instruments of the polluter-pays principle [7,11,12], and they are exposed to:

1. Solid waste [13,14], sewage [15–17] and effluent mismanagement [18–23]; and
2. Public budget allocation for the social costs borne by their public authorities for pollution prevention and control [24–27].

Thus, this research assessed the role of public interest litigation in the struggle against waste mismanagement in the AAA of Ethiopia (see details in Section 3.3).

(c) Research Question

The aim of this research was to investigate public interest litigation as a potential tool in the struggle against waste mismanagement in Ethiopia. Correspondingly, the following research questions were addressed: Considering past and present cases as well as the potential future prospects of this technique, can public interest litigation play an effective role in combating unsustainable waste management? What are the main obstacles to environmental public interest litigation? In this context, the effectiveness of this technique refers to the potential for encouraging environmental protection and management organs to implement the environmental tax and command-and-control instruments of the polluter-pays principle.

(d) Methodology

The research was delimited to the self-governing AAA, which is the capital city of Ethiopia, an integral part of the federal jurisdiction and accountable to the federal government [7,28]. The research assessed the role of public interest litigation in the achievement of sustainable waste management in the AAA of Ethiopia. A qualitative method and a single country case-oriented comparative research design that uses concepts that are applicable to other countries were employed. The qualitative analysis was iterative. Inferences were drawn through interpretation, and their validity was assured through primary and secondary data source triangulation. The operationalization of the key words is presented in Section 2, through the development of a literature review-based conceptual framework of public interest litigation in the context of sustainable waste management. Parallel to this, the research used federal and AAA environmental and tax laws, and official documents as the major sources of data on the role of public interest litigation in the achievement of sustainable waste management in the AAA of Ethiopia. The primary and secondary data of the research were triangulated and interpreted within the context of the conceptual framework of the research, and then concluding remarks and implications were drawn.

(e) Organization of the Article

The article is organized into four sections. After the Introduction, Section 2 deals with the conceptual framework of public interest litigation in the context of sustainable waste management. Section 3 assesses the role of public interest litigation in the achievement of sustainable waste management in the Addis Ababa Administration of Ethiopia. Finally, Section 4 presents the conclusion and implications of the research.

2. Conceptual Framework of Public Interest Litigation in the Context of Sustainable Waste Management

2.1. Sustainable Waste Management and Environmental Justice

Sustainable development goals (SDGs) are global in nature and universally applicable. They are integrated and indivisible [1], and the achievement of a particular SDG mutually contributes to the progress of other SDGs [29,30]. Accordingly, the proper implementation of public interest litigation within the context of environmental justice mutually enhances the progress of sustainable waste management which is defined as "using material resources efficiently to cut down on the amount of waste produced, and, where waste is generated, dealing with it in a way that actively contributes to SDGs " [31].

Correspondingly, Ethiopia has embraced the 2030 Agenda for Sustainable Development, Agenda 2063 of Africa and the Addis Ababa Action Agenda, and by 2030 it is aspiring to the achievement of sustainable waste management and environmental justice [1,32,33].

2.2. The Roles of Environmental Tax and Command-and-Control Instruments in the Achievement of Sustainable Waste Management

Market failures result from the failure of the market demand and supply schedules to reflect the full prices of externalities [34,35]. Pollution/depletion, where private benefits and costs diverge from social benefits and costs [35–37], is one of the classic cases of negative externality [35,37–41].

As a result, an unregulated market has room for unabated externalities [36,37,42,43] and grants an implicit subsidy to polluters [44,45]. Thus, when a market fails to appreciate the opportunity costs of environmental use, it causes overuse of the environment and overproduction of ecologically harmful products.

Meanwhile, while command-and-control instruments limit the quantity of residuals that each actor may generate, environmental taxes provide an ideal means of injecting appropriate price signals and creating markets for unpriced resources and environmental services [37,39,41,43,45–47].

As a result, when there is market failure, taxation and command-and-control instruments are the two supplementary/complementary policy mix instruments of the polluter-pays principle [38,39,41,43,48].

Mutatis mutandis, taxation and command-and-control have instrumental roles in the in the achievement of sustainable waste management in Ethiopia (see details in Section 3.3.1).

2.3. The Notion of Legal Capacity, Legal Standing and Justiciability

2.3.1. Legal Capacity to Sue or be Sued

Capacity is the power or ability to perform juridical acts. Being a party to a suit is one of the juridical acts. Hence, capacity to sue or be sued refers to a person's ability to represent his interest in a suit before a court of law without the assistance of another [49].

Accordingly, one could consider capacity as the most fundamental one as it provides for the definition of those beings or things, either natural or artificial, which will be bound by the law. One could generally say that the latter regulates the conduct of persons existing within a community [50].

Thus, we can observe beings or things having rights and duties under the law, and others having no full rights and duties. If someone or something falls within the first category, the whole field of the law will become applicable to him or it; if not, he or it will not be fully bound by the law [50].

Under the Ethiopian legal system, the civil procedure code provides that any person capable under the law may be a party to a suit [51]. This means that any person capable under the law can file a suit in his own name. In such circumstances, he is referred to as the named plaintiff or the named defendant. Hence, for a person to sue as a plaintiff or be sued as a defendant in his name, the issue of capacity has to be certain.

The reading between the lines of the above propositions does not mean that an incapable person cannot sue. That is, the fact that only capable persons can sue or be sued in their name does not imply that incapable persons under the law cannot sue in their own names, but that they must institute what are called representative suits [51].

Legal personality is bestowed to physical persons and legal persons. The first category consists of human beings and the second consists of entities all kinds which are recognized as holding rights and duties in the same way as human beings [52].

To be a holder of legal rights, there are four criteria that must be satisfied. All these criteria count towards making a thing count jurally—to have legally recognized worth and dignity in its own right. They are [52]:

1. The establishment of public authoritative bodies which are capable of giving some amount of review to actions that are inconsistent with rights bestowed to physical or legal persons.
2. The right of a thing to institute legal actions at its behest.
3. In determining the granting of legal relief, the court must take injury to it into account.
4. The relief must run to the benefit of it.

Concurrently, the characteristic of personality is the capacity to have or to enjoy rights and duties under the law that are enforceable by legal mechanisms as they exist in the society [53].

2.3.2. Legal Standing and Justiciability

The word "standing" emerged gradually during the twentieth century, coming into common use only from about the 1950s. Legal standing is in many ways a reflection of social conscience, expanding with socially recognized issues over time and slowly embracing environmental issues.

The concept of standing has also expanded from the individual to the group, and now it embraces also government actions [54].

Standing focuses on the question of whether the litigant is the legitimate party to fight the lawsuit, not whether the issue itself is justiciable [54].

The line between the requirement of standing and justiciability of the matter is by no means sharply and clearly drawn. However, it can be clarified by saying that standing refers to whether a particular applicant should be entitled to apply to a court for relief, while justiciability relates to the question of whether any applicants should be so entitled [55]. In other words, while standing is determined from the particular applicant's perspective, justiciability is determined from the matter per se.

As a corollary, while standing is needed to get an entry for hearing by a court of law or any other competent body with judicial power, justiciability is required in order for the petition to not be thrown out as unsuitable for adjudication by a court of law or any other competent body with judicial power [56].

2.4. Nature and Historical Use of Environmental Public Interest Litigation

2.4.1. Nature of Traditional and Public Interest Litigations

a. Nature of Traditional Litigation

Traditional litigation is a rule of ancient vintage and it arose during an era when private law dominated the legal scene and public law had not yet been born [56]. Until the arrival of public interest litigation, civil litigation was patterned exclusively on the traditional model [56].

The traditional concept of adjudication has several characteristics [57]. First, the case has a retrospective orientation; the court must decide questions of fact and law pertaining to past events.

Second, right and remedy are closely inter-related. Third, the lawsuit is bounded in time and effect; that is, judicial enrollment ends with the determination of the disputed issues, and the impact is limited to the parties before the court.

The traditional rule in regard to locus standi was that judicial redress was available only to a person who had suffered a legal injury by reason of violation of his legal right [58]. That is, the basis of entitlement to judicial redress is personal injury to property, body, mind or reputation arising from the violation of legally protected interests of the person.

If a person suffered injury along with the other members of the public, he had no access to the court, unless he suffered additional injury over others. That is, a person could have standing to vindicate a public right or interest if he could show that he had been specially and differently aggrieved by injuries to the public [57].

There are two justifications set by the proponents of traditional standing [57]. The first one is that because it is a civil suit, it concerns individual interest/right. It is up to a concerned party only to either litigate or abandon a claim. Hence, no other person could decide to bring action for a real party with interest in a suit. The second reason is that it enables defendants to avoid facing multiple suits over a single cause of action.

Despite the above justifications, several defects and limitations are inherently present within the very nature of the traditional procedure. A few glaring and flagrant defects are the following [56]:

1. The purpose of the traditional procedure is to enforce the rights of one individual against another, and not to enforce basic human rights of the public.
2. The narrow ambit of locus stand in traditional litigation permits entry only to aggrieved persons and not to any member of the public at large, acting bonafidely.
3. It does not provide any legal assistance to public interest groups, as it is less concerned with the legal aid movement.
4. Relief is provided only to the individuals who are personally and differently aggravated, and not to the diffused interest of the society.
5. It is an isolated individual effort of the aggrieved person to seize justice into his hand. Thus, traditional standing is certainly not a welcome opportunity for the government and its officers to examine the reality of the rights of the society.

For the very reasons above, the conventional method of justice administration is not adequate per se. It may be good for the protection of property rights, but it is not effective at administering social justice and enforcing the human rights and constitutional freedom of the millions who do not have access to courts [56].

Therefore, ensuring access to the court for those who demand social justice and enforcing the rights of the society require alternation and modification in the procedural techniques and methods of legal remedies.

Correspondingly, damage to publicly owned and publicly possessed natural resources, and to publicly owned but privately possessed natural resources that have a particular value to the public, is damage of a collective nature; and because no concrete individual interests are harmed, damages for this type of injury are in principle not recoverable under the traditional tort law [59].

b. Nature of Public Interest Litigation

The use of the term public interest litigation to cover the efforts to provide legal representation began in the 1960s. However, the various programs that contributed to the shaping of the ideology underlying the public interest law can be traced back to 1876 when the first legal aid office was established in New York City. The funding by private foundations led to the rapid development of public interest litigation and the activities associated with it [60].

The emergence of public interest litigation over the last forty years has been a salutary development towards providing the vast majority of citizens with access to just and effective protection

of their fundamental rights. Therefore, public interest litigation is a new paradigm for citizens to express their concerns for events occurring at the national and international level [61].

Initially, the major public interest litigation centers handled issues relating to civil rights, civil liberties, problems of the poor and social and political dissidents. Their chief clients and law suits were their principal political tools. By the end of 1975, however, the universe of public interest litigation had expanded and as a result its spectrum of issues came to include consumer protection, environmental protection, educational reform and the like [62].

Public interest litigation as it has developed in recent years marked a significant departure from traditional judicial proceedings. The guarantee of fundamental rights and the assurance of directive principles, described as the conscience of different constitutions, would have remained empty promises for the majority of illiterate and indigent citizens under adversarial proceedings. Public interest litigation has been a conscious attempt to transform the promises enshrined in different legal instruments into reality [63].

Public interest litigation is part of the struggle by, and on behalf of, the disadvantaged to use law to solve social and economic problems arising from a differential and unequal distribution of opportunities and entitlements in society. In an effort to procure justice between generations it is also concerned with preventing the present and future needless exploitation of human, natural and technological resources [62].

For the above reasons, the battle over expanded standing to sue is, in short, about whether everyone should have access to justice. Those with money and power already have access to justice. The battle over standing to sue is, therefore, about whether other citizens have access as well. In this respect, if democracy is for all, if the rule of law is for all, and if justice is for all, then standing should be for all as well [63].

This implies that the directions and commands issued by courts of law in public interest litigation are for the attainment of justice for the society at large, and not for benefiting only personally aggrieved individuals. Thus, any public-spirited person dedicated to a public cause has standing to bring a common cause before court. In this case, the center of gravity of justice is shifted from the traditional individualism of locus standi to the community orientation of public interest litigation [61].

Therefore, public interest litigation envisages [60]: (a) a court action by an individual or a group of individuals belonging to a community or an indeterminate class against any person who violates the law or an administrative wrong that remotely or equally affects the members of that community or class; and (b) a court action by a public-spirited citizen or a body devoted to the public cause to vindicate the rights of individuals, groups or even the public at large against a person who violates the law or an administrative wrong, though the person or body undertaking the court action may not have suffered any injury personally.

In public interest litigation, the petitioner seeks to champion a public cause for the benefit of the society. Again, the focus dictates the principal features of the litigation [57]. First, since the litigation is not strictly adversarial, the scope of the controversy is flexible. Parties and official agencies may be joined as the litigation unfolds, and new and unexpected issues may emerge to dominate the case. Second, the orientation of the case is prospective. The petitioner seeks to prevent illegitimate affairs from continuing into the future. Third, because the relief sought is corrective rather than compensatory, this type of litigation does not only depend on the right asserted. Fourth, it is difficult to delimit the duration and effect of this new kind of litigation. Prospective judicial relief implies continuing judicial involvement. The parties often return to the court for fresh directions and orders. Finally, because the relief is sometimes directed against government policies, it may have impacts that extend far beyond the parties in the case. In view of these features, it is a pressing need to establish Environmental Courts and Tribunals that flexibly and innovatively adopt public interest litigation [2].

The development of public interest litigation with the above stated features emanates from the fact that it provides a means to redress public wrongs which remained un-remedied under the traditional rules of locus standi. Traditionally, even when an individual had the will and capacity to approach the

court, the individual or groups suffering from adverse administrative action or from acts of persons who violate the law may not themselves be in a position to undertake litigation to vindicate their interests because of poverty, ignorance, and/or fear. Moreover, the interests affected may be so minute that there may not be any incentive to one individual to undertake court action to vindicate his grievance.

In a nutshell, public interest litigation has created a ray of hope in the dark abyss of civil litigation and injustice [56]. It is an effort made to wipe tears from every eye. As such, governments and their officers in any corner of the world must welcome public interest litigation, because it would provide them with an occasion to examine whether the society is attaining its rights under the legal system [56].

2.4.2. Historical Use of Public Interest Litigation in the Protection of the Environment

When there is market failure, states are expected to protect the environment through the use taxation and the command-and-control instruments of the polluter-pays principle [38,39,41,43,48]. Simultaneously, in seeking to hold states responsible for environmental pollution, public interest litigation could follow either a fundamental right approach or a duty of care method [4].

Certainly, the environmental rights-based litigation has a number of advantages. Significantly, rights rhetoric has tremendous potential for the mobilization of citizens for a cause [64]. Additionally, human rights are universal in scope, and therefore this argument is applicable beyond the national boundaries of a single state. Hence, it could be employed in cases before regional and international courts [4].

In addition, the historical use of public interest litigation within the context of environmental justice shows its potential role in the struggle against waste mismanagement in both common and civil law jurisdictions of developed and developing counties [4]. Thus, the application of public interest litigation in combating unsustainable waste management is not context-specific, and it can be stretched across all legal systems [4].

As a corollary, it is safe to conclude that the potential role of public interest litigation in the struggle against waste mismanagement is applicable in Ethiopia [5,6].

3. The Role of Public Interest Litigation in the Achievement of Sustainable Waste Management in Ethiopia

Subject to the conceptual framework of the research under Section 2, this section appraises the legal framework, role and obstacles of public interest litigation in the achievement of sustainable waste management in Ethiopia.

3.1. Legal Framework of Environmental Public Interest Litigation in Ethiopia

3.1.1. Liberalization of Standing that Led to Environmental Public Interest Litigation

Under the Ethiopian legal system, all persons have the right to live in a clean and healthy environment [8]. Since the right to live in a clean and healthy environment is part of the fundamental rights and freedoms of the Constitution of the Federal Democratic Republic of Ethiopia (FDRE), the federal and state legislative, executive and judicial organs at all levels and all citizens have the responsibility and duty to respect and enforce it [8,9].

Along with bringing about the legal penetration of environmental rights and duties, the Environmental Policy of Ethiopia [65] and the Rio Declaration [66] call for effective access to judicial and administrative proceedings. Concomitantly, the FDRE Constitution stipulates the following [8]:

1. Everyone has the right to bring a justiciable matter to, and to obtain a decision or judgment by, a court of law or any other competent body with judicial power
2. The decision or judgment referred to under sub-article 1 of this article may also be sought by any group or person who is a member of or represents a group with similar interests.

According to Fasil Nahom, Article 37 (2) (b) is designed to ensure that the door is wide open for the public to satisfy its needs of access to justice. What this means is that the constitution is in favor of broad, social issue-oriented employment of the law and its institutions, rather than a narrow legalistic approach that makes the law distant from everyday concerns of the society and difficult to access [67].

In this way, the constitution would work for making the law and the court truly serve the people rather than merely serving the lawyers. Beyond the traditional issues, the law and the courts would interest themselves and actively engage in broad social issues, such as ensuring a clean and healthy environment [67].

Accordingly, by stressing the importance of compliance with duties and not only rights, this expansion of the ability to sue will paradoxically build a stronger framework for the protection of diffused rights, such as the right to live in a clean and healthy environment.

Thus, consonant with the FDRE Constitution and the Environmental Policy of Ethiopia, the House of Peoples' Representatives has promulgated the Environmental Pollution Control Proclamation, which stipulates [9]:

> Any person shall have, without the need to show any vested interest, the right to lodge a complaint at the authority or the relevant regional environmental agency against any person allegedly causing actual or potential damage to the environment.

Based on this provision, the central question for public interest standing is whether a sufficient public injury had taken place as has been alleged to support the claim that the petition was brought in the public interest. Thus, the public interest standing provision should be read as doing away with the necessity of the plaintiff's vested interest.

Consequently, we can infer that a restrictive view of locus standi and person aggrieved has been supplemented by public interest standing. Thus, any public-spirited person dedicated to the public cause has standing to bring a common cause before a court of law.

Finally, with respect to the format, the public interest litigation form of pleading should be on the basis of Article 80 (2) and the statement of claim Form No. 36 (first schedule) of the Civil Procedure Code of Ethiopia [51].

3.1.2. Public Interest Standing in Administrative and Judicial Action

In environmental governance, one of the forces that impelled the liberalization of standing stemmed from the need to check substantive and/or procedural ultra vires of environmental authorities.

In Ethiopia, the objective of the Ministry of Environment, Forest and Climate Change is to formulate policies, strategies, laws and stakeholders that foster social and economic development in a manner that enhances the welfare of humans and the safety and sustainability of the environment. It is also to spearhead efforts to ensure the effectiveness of their implementation [68]. In line with this, it has also the duty to coordinate measures and to ensure that the environmental objectives provided under the constitution and the basic principles set out in the Environmental Policy of Ethiopia are realized [68]. On the basis of the above objectives and duties of the Ministry, we can infer that it is vested with enormous regulatory powers.

Despite the above regulatory powers vested in the Ministry, however, it could delay, miss deadlines, convert mandatory standards to discretionary ones, create loopholes, water down strict statutes in the regulatory process, or simply refuse to use its enforcement powers when faced with blatant violations [69]. In such cases, if it causes damage to any person who has vested interest, it will be legally liable. Nonetheless, when its acts and/or omissions cause damage to the public interest, the scheme of traditional litigation precludes relief and renders its failure immune from judicial scrutiny [69]. At the same time, Ethiopia's unpreparedness to have a comprehensive administrative law reinforces the substantive and/or procedural violations of public officials.

To curb instances of such environmental organs' lawlessness with diffused impacts, therefore, the House of Peoples' Representatives of Ethiopia expanded the standing in environmental proceedings to enable every citizen to challenge their inaction or abuse in the interest of the public, even when the citizen has not yet sustained personal injury [9].

In this case, though public interest standing provisions are drawn cautiously, they represent a substantial qualification of two of the more durable dogmas of public law. The first is that prosecution and enforcement is solely the business of public officials and perpetrators. The second, the corollary of the first, is that regulatory and enforcement priorities are left to the authorities with little or no interference from outsiders, particularly the courts [70]. In this respect, while the Environmental Pollution Control Proclamation by no means has discarded the notion of public control of public prosecution, the novel fashioning of the public interest standing provision recognizes that compliance with environmental laws is the business of an alert community as well as of trained specialists.

As a result, the Environmental Pollution Control Proclamation, which is the first of its kind and thus a prototype for public interest standing, provides that [9]:

> [w]here the authority or regional environmental agency fails to give a decision within thirty days or when the person who has lodged the complaint is dissatisfied with the decision, he may institute a court case within sixty days from the date the decision was given or the deadline for decision has elapsed.

The article proposes to grant public interest groups a secondary right of standing. Only in cases where the public authorities do not act at all, or not properly, do alert citizens or public interest groups have the right to take legal action. Alert citizens or public interest groups thus must respect the waiting period of thirty days, during which the environmental authorities have the exclusive right to take action and decide on the necessity and extent of restoration measures. In other words, the notice provisions are intended to afford the authority an opportunity to do its job. They are not to frustrate the citizens' actions with procedural trickery, and they should be construed flexibly and realistically to advance the essential purpose. In cases of urgent situations, however, there is legal ground to grant such public-spirited individuals the right to directly ask a court for an injunction in order to prevent significant damage or avoid further damage to the environment [51].

In the case of judicial review, when the person who has lodged the complaint is dissatisfied with the decision, it seems that public interest groups are not only granted the right to challenge the decision of the public authorities not to recover damage, but they may also challenge any relevant decision, including the one regarding the selection of the most appropriate restoration alternative if they can make a plausible case that the selected alternative is inappropriate. The latter might be the case if the selected restoration alternative is inadequate to fully restore at a reasonable price the damaged natural resources, or if a full restoration would take too long [59].

In line with the above points, a vital issue that needs to be understood by any individual or group considering bringing a judicial review is timeliness. The rule is that an application for judicial review in an environmental proceeding must be brought promptly and in any event within sixty days from the date the decision was given or the deadline for decision has elapsed [9]. The justification behind this period of limitation could be the fact that judicial review is usually aimed at stopping decisions before they are put into effect rather than when it is too late and the harm has already been done [49]. Since the right to a clean and healthy environment is one of the fundamental rights [8], the court should have discretion to extend the period of limitation when there is a good reason for delay. Even if this is the case, however, since the discretion is with the court, it may be difficult for the plaintiff to persuade the court to agree to extend the time in cases where a third party has been prejudiced by the delay. For this very reason, the plaintiff is advised to conform to the primary duty that the application must be made promptly.

In legal standing in relation to environmental proceedings, the next issue that requires due consideration is identifying the plaintiff(s) who could initiate legal action when damage is caused to

the environment. When damage is done to the environment under the FDRE's legal system, several persons have legal standing, so that it is pertinent to scrutinize whether there could be a joinder of plaintiffs in the legal action. In legal action, "joint plaintiffs" simply means plaintiffs consisting of more than one person or party who seeks to file suit against the same defendant or defendants. On the basis of the Civil Procedure Code of the FDRE, persons are entitled to join as plaintiffs if two conditions are satisfied [51]: (1) the right to relief must arise from the same transaction or series of transactions, whether jointly, severally or in the alternative; and (2) if such persons brought separate actions, a common question of law or fact would arise. In environmental proceedings, the right to a clean and healthy environment is a collective as well as a personal right, and the right to bring legal action does not require the demonstration of any vested interest. Furthermore, legal personality in an environmental proceeding is multifaceted in that such a proceeding may bestow legal personality to the future generations and to the environment itself as a separate legal entity. Thus, at times when the two conditions set in the civil procedure are fulfilled, the joinder of plaintiffs should be allowed when bringing legal action against the same defendant(s).

The corollary to the identification of the plaintiff(s) is the identification of the responsible party—that is, the defendant(s). As has already been stated, in a judicial review in relation to an environmental proceeding, the complaint is that the environmental authority either allows a harmful or polluting activity to be carried out or does not prevent the polluter(s) from continuing. In this respect, we can see at least two parties for the pollution of the environment; these are the polluter(s) and the environmental authority. As a corollary, it is important to scrutinize whether there is ground for the joinder of defendants. Under the Ethiopian legal system:

> All persons against whom the right to any relief is alleged to exist, whether jointly, severally or in the alternative, may be joined as defendants where, if separate suits were brought against such persons, any common question of law or fact would arise [51].

In this provision, there is only one condition for joinder of defendants, namely a common question of law or fact. In line with this requirement for the joinder of defendants, in public interest litigation in relation to environmental proceedings, it is fairly easy to pinpoint the existence of a common question of law or fact that would make the environmental authority and the polluter(s) joinder defendants. Consequently, we can bring legal action against them jointly. At this juncture, however, it is important to take notice that it is not necessary that every defendant be interested as to all the relief claimed in any suit against him [51].

That is, the plaintiff(s) could seek some relief against one defendant and different or alternative relief against others. The point is, therefore, that the plaintiff may join all defendants if there is any common question of law or fact irrespective of the difference in the type of relief claimed from each defendant. In other words, the plaintiff does not have to claim the same relief against all defendants, and the court will enter a judgment against each defendant to the extent that the defendant may be found liable to the plaintiff(s). Accordingly, the relief claimed against one defendant may be inconsistent with that claimed against the other defendants. Hence, the environmental authority or the polluter/s have no ground for objection from being joinder defendants on the basis of the fact that they may not be liable for all or the same relief the plaintiff claims.

Following the identification of the parties to a suit, the next issue that should be addressed is the question of material jurisdiction in an environmental proceeding. Under the Ethiopian legal system, the Civil Procedure Code [51] and the Federal Courts Proclamation [71] provides that a suit the subject matter of which cannot be expressed in terms of money shall be entertained by the Federal First Instance Court having local jurisdiction.

The same procedure applies in environmental proceedings since the subject matter of the suit in environmental proceedings may not be expressed in terms of money.

Before concluding the discussion, to have a full-fledged understanding of this topic, it is also important to look briefly at the principle of res judicata. According to this principle, if a state acts

properly in its capacity to address the damage to the environment, the private parties do not have an interest that is distinct from the interest on behalf of whom the state is acting, and they will in turn be bound by res judicata. Nonetheless, when there are damages that have not yet been entertained by the government, they are recoverable without being hampered by the principle of res judicata.

In cases where the claim to damage to the environment is initiated by public interest groups, the law provides the following.

> Where persons litigate in good faith in respect of public or private rights claimed in common for themselves and others, all persons interested in such rights shall be deemed to claim under the person so litigating [51].

An a contrario reading of the provision implies that, if the previous proceeding was not bona fide public interest litigation, the rule of res judicata will not operate and the subsequent proceeding would not be barred by res judicata.

3.2. Obstacles to Environmental Public Interest Litigation in Ethiopia

3.2.1. The Judiciary System of Ethiopia and Environmental Public Interest Litigation

In the Federal Democratic Republic of Ethiopia, judicial power is vested in both the federal government and the regions [8,71]. Correspondingly, this section appraises the federal and AAA judiciary system in the context of public interest litigation.

(1) Federal Government Judiciary System

Based on the FDRE Constitution, in Ethiopia "Supreme Federal judicial authority is vested in the Federal Supreme Court. The House of Peoples' Representatives may, by two-thirds majority vote, establish nationwide or in some parts of the country only, the Federal High Court and First-Instance Courts it deems necessary" [8].

Accordingly, the federal government has established the Federal Supreme Court, the Federal High Court and the Federal First Instance Court with civil, criminal and labor divisions [71]. They shall have civil jurisdiction over, among other things, cases to which a federal government organ is a party; cases regarding the liability of employees of the federal government in connection with their official responsibilities; and suits relating to business organizations registered or formed under the jurisdiction of the federal government organs [71].

Accordingly, civil cases relating to the Ministry of Environment, Forest and Climate Change of Ethiopia and the Ministry of Water, Irrigation and Electricity and their officials, and the federally licensed industries are subject to jurisdiction of the federal courts.

Correspondingly, the federal courts shall settle cases or disputes submitted to them within their jurisdiction on the basis of federal laws, international treaties and regional states' laws where the cases relate to the same [71].

In parallel, the Civil Procedure Code of Ethiopia shall apply with respect to matters not provided for under this Proclamation in so far as they are not inconsistent therewith [71].

(2) Addis Ababa Administration (AAA) Judiciary System

On the basis of the FDRE Constitution in Ethiopia, "states shall establish State Supreme, High and First-instance Courts. Particulars shall be determined by law" [8]. Accordingly, the AAA has established the Addis Ababa City Courts and Qebele Social Courts; and Labour Relations Board, Civil Service Tribunal, Tax Appeals Commission and Urban Land Clearance Matters Appeals Commission, which are entrusted with judicial power [72].

Correspondingly, the Addis Ababa Administration Courts shall have, among other things, civil jurisdiction over suits arising in connection with the regulatory powers and functions of the executive

and municipal service bodies of the administration [72]. Accordingly, civil cases relating to the Addis Ababa Environmental Protection Authority, Addis Ababa Cleanliness Administration Agency, Addis Ababa Solid Waste Re-use and Disposal Project Office and Addis Ababa Water and Sewerage Authority are subject to the jurisdiction of the Addis Ababa Administration Courts.

Nevertheless, at this juncture, it is important to note that neither the federal government nor the AAA is in position to establish environmental divisions that flexibly and innovatively adopt public interest litigation in the context of environmental justice [23,73,74].

3.2.2. Civil Procedure Code of Ethiopia and Environmental Public Interest Litigation

Subject to traditional litigation (see details in Section 2.4.1 (a)), the Civil Procedure Code of Ethiopia was drafted by the Codification Department of the Ministry of Justice. The Code was promulgated as a Decree [51] by the Emperor [75], and it became effective on 8 October 1965.

The Civil Procedure Code has stipulated that no party may be a plaintiff in a suit unless he (she) has a vested interest in the suit [51]. Besides, save suits by paupers [51], no statement of claim shall be admitted under Art. 230 of the Code except after payment of the prescribed court fee [51]. This implies that the Code is literally designed to translate traditional litigation into action.

Recently, Ethiopia has given a green light to environmental public interest litigation [9]. However, the prototype case APAP vs. the Federal Environmental Protection Authority of Ethiopia has demonstrated that the case was entertained in a landscape equipped for traditional litigation [23].

An issue of considerable practical importance in public interest litigation is who pays the bill for environmental litigation. It is an unfortunate but inescapable fact of life that the energy of the legal system is responsive largely to financial incentives.

It is important to note that litigation costs may be awarded to any party. This means that plaintiffs may be assessed with litigation costs. Accordingly, high costs of civil procedure and especially the risk of losing the case and, as a result, having to pay the costs incurred by the other party may deter public interest groups. In other words, unless public interest groups are protected from awards of litigation costs for all but extreme instances of bad faith and frivolous assertion, the ends of the public interest standing measures will be served poorly.

Thus, to have actual public interest litigation, the government should improve public participation in the legal process by changing the cost rules for cases brought forward by private litigants that are demonstrably in the public interest.

Thus, there is a pressing need for Ethiopia to cautiously revise its Civil Procedure Code in a way that accommodates the peculiar features of public interest litigation.

3.2.3. Civil Society Organizations and Environmental Public Interest Litigation in Ethiopia

Environmental organizations play a critical role in shaping the implementation of our environmental laws. One of the primary methods these groups use is judicial challenges to agency regulations or actions that these groups believe will harm the environment [76].

In Ethiopia, there are Ethiopian Charities [77], Ethiopian Resident Charities [77 and Foreign Charities [77]. On the basis of the Charities and Societies Proclamation of Ethiopia, a charity refers to an institution that is established exclusively for charitable purposes and gives benefit to public, charitable purposes, including both rights and development-based activism [77].

Nevertheless, at the moment, the advancement of human and democratic rights and the promotion of the efficiency of the justice and law enforcement services can be exercised only by Ethiopian Charities [77]. As a result, Ethiopian Resident Charities/Societies, and Foreign Charities cannot exercise environmental justice-based human rights activism.

Thus, at the moment, it is safe to conclude that the scope of public interest standing in Ethiopia is highly restrictive for Civil Society Organizations.

3.3. The Role of Public Interest Litigation in the Achievement of Sustainable Waste Management in the Addis Ababa Administration of Ethiopia

In Ethiopia, the federal and state legislative, executive and judicial organs at all levels have a duty to respect and enforce the right to a clean and healthy environment [8,9].

In addition, Ethiopia is committed to fostering common but differentiated responsibilities that avoid conflicts of interest and duplication of efforts by assigning responsibilities to separate organizations for environmental and natural resource development and management activities on the one hand and environmental protection, regulation and monitoring on the other [65,68,78,79].

Correspondingly, this research assesses the role of public interest litigation in encouraging the federal and regional environmental protection and management organs of Ethiopia to implement environmental tax and the command-and-control instruments of the polluter-pays principle as means of achieving sustainable waste management in Ethiopia.

3.3.1. Municipal Waste and Effluent Management

Municipal Waste Management

In the Addis Ababa Administration, the Addis Ababa Cleanliness Administration Agency (AACAA) [80–82], Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) [80–82] and Addis Ababa Water and Sewerage Authority (AAWSA) [80–84] are, respectively, bound to ensure environmental tax-based sustainable solid waste collection, landfill and sewerage services in the AAA [80]. Correspondingly, this section is allocated to appraise the law and the practice of their respective sanitary service provision.

a. Solid Waste Management

In the AAA, the Addis Ababa Cleanliness Administration Agency (AACAA) is bound to internalize the social cost of its solid waste collection service [81] and to incentivize sustainable solid waste management through the implementation of a solid waste charge [7,9,80–82,85].

However, since the rate of the solid waste charge is so nominal [12], and there is only a partly effective solid waste charge collection system [11], AACAA is slightly translating the distributive role of the solid waste charge into action [12,86–88].

As a result, the lion's share of the social cost of its solid waste collection service [86–88 is covered by the subsidy it is allocated from the AAA [12,24–27].

At the same time, in the AAA, the Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) is bound to internalize the social cost of its landfill service and to incentivize sustainable solid waste management through the practical implementation of a landfill charge [7,9,80–82].

Nevertheless, since the rate of the landfill charge is so nominal [12] and there is only a partly effective landfill charge collection system [11], AASWRDPO is slightly translating the distributive role of the landfill charge into action [12]. Consequently, the lion's share of the social cost of its landfill service [89–91] is covered by the subsidy it is allocated from the AAA [12,24–27].

Simultaneously, since the rates of the solid waste and landfill charges are nominal, they are not creating an incentive for the residents of the AAA to sustainably manage their solid waste [14,92].

b. Sewerage Service

In the AAA, the Addis Ababa Water and Sewerage Authority (AAWSA) is bound to internalize the social cost of its sewerage service and to incentivize sustainable sewerage management through the practical implementation of sewerage service charges, including sludge dislodging and sewer service charges [7,9,80–84].

Nevertheless, since the rate of the sewerage service charge is so nominal [12], AAWSA is only slightly translating the distributive role of sludge dislodging charge [12].

In addition, since the rate of the sewerage service charges is nominal, it is not creating an incentive for the residents of the AAA to sustainably manage their sludge and sewage [93,94].

As a logical extension of the foregoing points, at the moment, one can safely conclude that the sanitary service provision organs of the AAA, i.e., AACAA, AASWRDPO and AAWSA, are not properly exercising their respective sanitary service provision.

3.3.2. Effluent Management

a. The Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE)

In line with environmental federalism, the MEFCCE has a duty to enforce the federal environmental policies and laws and to spearhead the assurance of environmental protection [65,68,95]. In parallel, it is bound to avoid overlaps, wastage and gaps in their implementation [78], and where necessary, delegate part of its mandates to other federal/regional organs [68,95]. Accordingly, this section is allocated to appraise the law and the practice of its environmental impact assessment, permit and regulation systems.

(1) Environmental Impact Assessment System

Being sector neutral [79], the MEFCCE has the mandate to establish a federal environmental impact assessment (EIA) system for projects that are subject to licensing, execution and supervision by a federal agency or that are likely to produce a trans-regional impact. As a corollary, it is responsible for evaluating and monitoring the implementation of the EIA study and environmental management plans of the projects, respectively [68,78,96].

In practice, the MEFCCE has, on the basis of the decision of the Council of Ministers of Ethiopia (CME), delegated its power to review EIAR to sectoral institutions [97]. Subsequently, the MWIEE [97] and Ministry of Industry of Ethiopia [97,98] are, inter alia, reviewing the EIA studies of the proponents that fall in their sectoral jurisdiction.

Since the delegation of the power to review EIAR is bestowed on sectoral institutions that have a conflict of interest in the review, and because it is performed on the basis of the decision of the CME, it is vulnerable to substantive and procedural ultra-vires [98].

Thus, while the EIA mandate of the MEFCCE is consonant with environmental federalism, the delegation of part of it to sectoral institutions is susceptible to sectoral conflict of interest.

(2) Environmental Permit and Regulation System

Where projects are subject to federal licensing, execution and supervision or when they are likely to produce trans-regional impact, they are subject to the MEFCCE permit and regulation system [10,68,96].

In practice, since it has delegated its industrial, manufacturing and service delivery permit issuance and renewal mandate to the Addis Ababa Environmental Protection Authority (AAEPA) [99,100], its effluent permit and renewal mandates on proponents that are likely to produce a trans-regional/national impact in the AAA by default fall within the domain of AAEPA.

Thus, while the permit and regulation mandates of the MEFCCE are consonant with environmental federalism, the delegation of its permit and regulation mandates to AAEPA is susceptible to inter-state conflict of interest.

b. The Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE)

In Ethiopia, the Ministry of Water, Irrigation and Electricity (MWIEE) may issue permits for the release of treated waste into rivers linking two or more states or crossing the territorial jurisdiction of Ethiopia and may collect effluent charges from permit holders [101,102].

The inbuilt area of Addis Ababa is found in the Akaki River basin, and the absolute majority of industries in it dispose their effluent into the Akaki River, which joins to the trans-regional Awash River that crosses the Oromia and Somalia National Regional States of Ethiopia [103].

Concurrently, the MWIEE is bound to internalize the cost of restoration of authorized degradation of the Akaki River and to incentivize sustainable effluent management through the practical implementation of a federal effluent charge [7,101].

In practice, since the federal government has not yet developed the rate of its effluent charge [12], it has no operating effluent permit system [11] and there is no effluent charge collection system [11], the MWIEE is neither internalizing the social cost of authorized degradation of the Akaki River nor creating an incentive for the industries to sustainably manage their effluent [12].

Hence, the absolute majority of the industries are hardly using the full range of effluent abatement options, and they are directly disposing their untreated effluent into the Akaki River [12,20,21,23,73,74,98,103–105].

As a logical extension of the foregoing points, at the moment, one can safely conclude that the MEFCCE and MWIEE are not fully exercising their mandate in the protection and management of the Akaki River.

3.3.3. Public Interest Litigation Opportunities in the Achievement of Sustainable Waste Management

a. Public Interest Litigation in the Addis Ababa Administration (AAA) of Ethiopia

As clearly indicated under Section 3.3.1, the Addis Ababa Cleanliness Administration Agency (AACAA), Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) and Addis Ababa Water and Sewerage Authority (AAWSA) are not properly exercising their mandate. Consequently, the AAA is subject to prevalent municipal waste mismanagement.

Thus, any person, without the need to show vested interest, can lodge a complaint with the Addis Ababa Environmental Protection Authority (AAEPA) against the sanitary service provision organs that fail to provide sustainable solid waste and sewerage management [106].

When the AAEPA fails to give a decision within thirty days or when the person who has lodged the complaint is dissatisfied with the decision, he may institute a case in the AAA first instance court within sixty days from the date the decision was given or the deadline for decision has elapsed [106].

Ultimately, following exhaustion of local remedies or when there is undue prolongation, the public interest groups can lodge their complaint against the government of Ethiopia at the African Commission on Human and Peoples' Rights [107].

Thus, at the moment, it is safe to conclude that public interest litigation can play an effective role in combating unsustainable solid waste and sewerage management in the AAA of Ethiopia.

b. Public Interest Litigation in the Federal Jurisdiction of Ethiopia

As clearly indicated under Section 3.3.2, the Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE) and the Ministry of Water, Irrigation and Electricity (MWIEE) are not properly exercising their mandate. Consequently, the absolute majority of industries in the AAA dispose their effluent into the Akaki River [103].

Thus, any person, without the need to show vested interest, can lodge a complaint with the MEFCCE against itself and the MWIEE for their failure to realize sustainable effluent management [9].

When the MEFCCE fails to give a decision within thirty days or when the person who has lodged the complaint is dissatisfied with the decision, he may institute a case in the federal first instance court within sixty days from the date the decision was given or the deadline for decision has elapsed [9].

Ultimately, following exhaustion of local remedies or when there is undue prolongation, the public interest groups can lodge their complaint against the government of Ethiopia at the African Commission on Human and Peoples' Rights [107].

As a corollary, at the moment, it is safe to conclude that public interest litigation can play an effective role in combating unsustainable effluent management in Ethiopia.

4. Conclusions

This research assessed the role of public interest litigation in the achievement of sustainable waste management in the AAA of Ethiopia. It has first shown Ethiopia's commitment to sustainable waste management, implement environmental tax and the command-and-control instruments of the polluter-pays principle and public interest litigation within the context of environmental justice. Secondly, it has shown that public interest litigation is one of the innovative techniques in a struggle against waste mismanagement across all legal systems. Thirdly, it has demonstrated the potential role of public interest litigation in Ethiopia for encouraging the federal and regional environmental protection and management organs to implement environmental tax and command-and-control instruments. Fourthly, it has uncovered that public interest litigation is not fully compatible with the Civil Procedure Code of Ethiopia. Fifthly, it has shown the failure of the judiciary system of Ethiopia to accommodate environmental courts and tribunals that flexibly and innovatively adopt public interest litigation. Sixthly, it has revealed that, in Ethiopia, the scope of public interest standing is highly restrictive for Civil Society Organizations (CSO). Finally, it implies that the legal viability and administrative feasibility of environmental public interest litigation in Ethiopia is in its infancy, and its crystallization is partly contingent on the cautious review of the Civil Procedure Code and CSO laws and on greening the judiciary system.

Funding: This research was funded by The Netherlands Organisation for International Cooperation in Higher Education (Nuffic) grant number NICHE/ETH/020.

Conflicts of Interest: The author declares no conflict of interest.

References and Notes

1. 2030 Transforming Our World: The 2030 Agenda for Sustainable Development (2015). Goal 6, 16. Available online: https://www.un.org (accessed on 30 April 2018).
2. Pring, G.; Pring, C. *Environmental Courts and Tribunals*; UNON/Publishing Services Section: Nairobi, Kenya, 2016; pp. 13–14. ISBN 978-92-807-3608-3. Available online: http://wedocs.unep.org/bitstream/handle/20.500.11822/10001/environmental-courts-tribunals.pdf?sequence=1 (accessed on 11 June 2018).
3. Hussain, F. Public Interest Litigation in Pakistan. Working No. 5. Available online: https://www.sdpi.org/publications/files/W5-Public%20Interest%20Litigation.pdf (accessed on 2 July 2018).
4. Van Geel, O. Urgenda and beyond: The past, present and future of climate change public interest litigation. *Maastricht Univ. J. Sustain. Stud.* **2017**, *64*, 66. Available online: http://openjournals.maastrichtuniversity.nl/SustainabilityStudies/article/view/508/370 (accessed on 2 July 2018).
5. United Nations Committee for Development Policy, List of Least Developed Countries (as of March 2018). Available online: https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf (accessed on 29 June 2018).
6. Tesfaye, A. *Introduction to Law and the Ethiopian Legal System*; Justice and Legal System Research Institute: Addis Ababa, Ethiopia, 2009; p. 58. Available online: https://chilot.me/wp-content/uploads/2011/06/introduction-to-law-and-ethiopian-legal-system.pdf (accessed on 30 May 2018).
7. Gebregiorgs, M.T. What are the instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle in Ethiopia? *SAJELP* **2016**, *22*, 3–43.
8. The Constitution of the Federal Democratic Republic of Ethiopia, Proclamation (FDREC); No. 1/1995, No. 1, 1995, Article 13(1), 37, 44, 78, 92.
9. Federal Pollution Control Proclamation; No. 300/2002, No. 12, 2002, Article 5, 11.
10. Prevention of Industrial Pollution Council of Ministers Regulation; No. 159/2008, No. 14, 2008, Article 5, 10, 13.
11. Gebregiorgs, M.T. Introducing an administratively feasible environmental tax system in Ethiopia. *JELL* **2018**, *33*, 327–374.
12. Gebregiorgs, M.T. Towards sustainable waste management through cautious design of environmental taxes: The case of Ethiopia. *Sustainability* **2018**, *10*, 3088. [CrossRef]

13. Addis Ababa Cleanliness Administration Agency (AACAA). *Addis Ababa Cleanliness Administration Agency Solid Waste Policy*; AACAA: Addis Ababa, Ethiopia, 1995.
14. Bjerkli, C.L. Governance on the ground: A study of solid waste management in Addis Ababa, Ethiopia. *IJURR* **2013**, *37*, 1273–1287. [CrossRef]
15. Addis Ababa Water and Sewerage Authority (AAWSA). *Waste Water Treatment and Reuse Sub-Process 2015 Annual Report*; AAWSA: Addis Ababa, Ethiopia, 2015.
16. Addis Ababa Water and Sewerage Authority (AAWSA). *Waste Water Treatment and Reuse Sub-Process 2016 Annual Report*; AAWSA: Addis Ababa, Ethiopia, 2016.
17. Addis Ababa Water and Sewerage Authority (AAWSA). *Waste Water Treatment and Reuse Sub-Process 2017 Annual Report*; AAWSA: Addis Ababa, Ethiopia, 2017.
18. Environmental Protection Authority 'National Report of Ethiopia: UN Conference on Sustainable Development' (Rio+20). 2012. Available online: https://sustainabledevelopment.un.org/content/documents/973ethiopia.pdf (accessed on 30 April 2018).
19. Ministry of Water Resources. *Ethiopian Water Resources Management Policy*; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2001.
20. Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE). *Assessment on Industrial Pollution and the Environmental, Economic and Social Impact*; MEFCCE: Addis Ababa, Ethiopia, 2014.
21. Ministry of Industry of Ethiopia. *Summary of Review Works on Environmental Management Practices of Selected Industries in Ethiopia*; Ministry of Industry of Ethiopia: Addis Ababa, Ethiopia, 2014.
22. Tsegai, B. Industrial Pollution Control and Management in Ethiopia: A Case Study on Almeda Factory and Sheba Leather Industry in Tigrai National Regional State. Ph.D. Thesis, University of Warwick School of Law, Warwick, UK, 2015. Available online: wrap.warwick.ac.uk/67913/1/WRAP_THESIS_Ghebretekle_2015.pdf (accessed on 29 April 2018).
23. Federal First Instance Court of Ethiopia. *Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia*; Civil File No. 64902; Federal First Instance Court: Addis Ababa, Ethiopia, 28 February 2007.
24. Addis Ababa City Government 2006 E.C. Fiscal Year Budget Proclamation; No. 31/2013, No. 39, 2013.
25. Addis Ababa City Government 2007 E.C. Fiscal Year Budget Proclamation; No. 41/2014, No. 41, 2014.
26. Addis Ababa City Government 2008 E.C. Fiscal Year Budget Proclamation; NO. 44/2015 E.C., NO. 44, 2015.
27. Addis Ababa City Government 2009 E.C. Fiscal Year Budget Proclamation; NO. 47/2016 G.C., NO. 47, 2016.
28. Addis Ababa City Government Revised Charter Proclamation; No. 361/2003, No. 86, 2003.
29. Addis Ababa Action Agenda of the Third International Conference on Financing for Development (2015). pp. 5–6. Available online: www.un.org (accessed on 23 May 2018).
30. World Health Organization, Chemicals and Waste Management: Essential to Achieving the Sustainable Development Goals. Available online: http://www.who.int/iomc/publications/IOMC_CWMandSDG_brochure_final_01Feb18.pdf (accessed on 1 May 2018).
31. Directive 2008/98/EC on Waste. Available online: http://ec.europa.eu/environment/waste/framework/framework_directive.htm (accessed on 27 April 2018).
32. National Planning Commission of Ethiopia. *Growth and Transformation Plan II of Ethiopia Volume I: Main Text (2015/16-2020/21)*; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2016; pp. 76, 77, 113.
33. Finance and Economic Development Bureau of Addis Ababa Administration. *Growth and Transformation Plan II (2015/16-2020/21)*; Addis Ababa Administration: Addis Ababa, Ethiopia, 2016; p. 39.
34. Bhatia, H.L. *Public Finance*, 19th ed.; Vikas Publishing House PVT LTD: New Delhi, India, 1998; p. 5.
35. Markandya, A.; Perelet, R.; Mason, P.; Taylor, T. *Dictionary of Environmental Economics*; Earthscan Publications Ltd.: London, UK, 2002; pp. 5, 94, 129, 172. ISBN 1-85383-529-3.
36. Alm, J.; Banzhaf, H.S. Designing economic instruments for the environment in a decentralized fiscal system. *J. Econ. Surv.* **2012**, *26*, 178–179. Available online: https://ideas.repec.org/a/bla/jecsur/v26y2012i2p177-202.html (accessed on 30 May 2018). [CrossRef]
37. Pigou, A.C. *The Economics of Welfare*, 1st ed.; Palgrave Macmillan: London, UK, 1932; pp. 21, 134, 172. ISBN 978-0230249318.
38. De Sadeleer, N. *Environmental Principles from Political Slogan to Legal Rules*; Oxford University Press: New York, NY, USA, 2002; p. 21. ISBN 978-0-19-928092-6.

39. Bell, S.; McGillivray, D. *Environmental Law*, 7th ed.; Oxford University Press: New York, NY, USA, 2008; pp. 18, 239, 240. ISBN 978-0-19-921102-9.
40. OECD. *Environmentally Related Taxes in OECD Countries: Issues and Strategies*; OECD Publications Service: Paris, France, 2001; p. 19. ISBN 92-64-18731-6. Available online: https://www.cbd.int/financial/fiscalenviron/g-fiscaltaxes-oecd.pdf (accessed on 30 May 2018).
41. Kolstad, C.D. *Environmental Economics*; Oxford University Press: Oxford, UK, 2010; pp. 91, 151. ISBN 9780199732647.
42. Ashford, N.A.; Caldart, C.C. *Environmental Law, Policy, and Economics: Reclaiming the Environmental Agenda*; MIT Press: London, UK, 2008; p. 132. ISBN 978-0-262-01238-6.
43. Stewart, R.B. Economic incentives for environmental protection: Opportunities and obstacles. In *Environmental Law, the Economy, and Sustainable Development*; Revesz, R.L., Sands, P., Stewart, R.B., Eds.; Cambridge University Press: Cambridge, UK, 2008; pp. 172, 174, 176, 179. ISBN 0 521 64270 1.
44. Snape, J.; de Souza, J. *Environmental Taxation Law: Policy, Contexts and Practice*; Ashgate Publishing Limited: Aldershot, UK, 2006; p. 119. ISBN 0 7546 2304 1.
45. Murty, M.N. Market-based instruments for pollution abatement in India. In *Economics of Environment and Development*, 1st ed.; Kumar, P., Ed.; Ane Books: New Delhi, India, 2005; pp. 128, 130. ISBN 10:8180520838.
46. Barde, J.-P. *Economic Instruments in Environmental Policy: Lessons from the OECD Experience and Their Relevance to Developing Economies*; Working paper No. 92; OECD: Paris, France, 1994; p. 10.
47. UNEP. The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges. Available online: https://unep.ch/etu/publications/Economic_Instrument_Opp_Chnall_final.pdf (accessed on 31 May 2018).
48. The International Bank for Reconstruction and Development (IBRD); The World Bank (WB). *Environmental Fiscal Reform What Should Be Done and How to Achieve It*; The International Bank for Reconstruction and Development; The World Bank: Washington, DC, USA, 2005; pp. 12, 17, 20. Available online: http://siteresources.worldbank.org/INTRANETENVIRONMENT/Publications/20712869/EnvFiscalReform.pdf (accessed on 31 May 2018).
49. Day, M. *Environmental Action: A Citizen Guide*; Pluto Press: London, UK, 1988; pp. 185, 194. ISBN 10: 0745311903.
50. Vanderline, J. *The Law of Physical Persons*; Addis Ababa: Faculty of Law, Haile Sellassie I University: Addis Ababa, Ethiopia, Ethiopia, 1969; p. 3.
51. Civil Procedure Code of Ethiopia Decree (CPCED); No. 52, 1965, No. 3, 1965, Article 5, 18, 32(2), 33(1), 35, 36(1) and (2), 38, 154(1), 215(1), 467(2).
52. Stone, C.D. Should trees have standing: Toward legal rights for natural objects. *Calif. Law Rev.* **1972**, *45*, 455. Available online: https://iseethics.files.wordpress.com/2013/02/stone-christopher-d-should-trees-have-standing.pdf (accessed on 4 July 2018).
53. Planiol, M. *Treatise on the Civil Law (Vol. I)*; West Publishing Company: St. Paul, MN, USA, 1959; pp. 3–4.
54. Gilpin, A. *Dictionary of Environmental Law*; Edward Elgar Publishing Limited: Cheltenham, UK, 2000; pp. 19, 289. ISBN 1840641886.
55. *American Jurisprudence*, 2nd ed.; Lawyers Co-operative Pub. Co.: Rochester, NY, USA, 1962; p. 380.
56. Jaint, S. *Public Interest Litigation*; Deep and Deep Publications LTD: New Delhi, India, 2002; pp. 255, 257, 258, 281, 490, 495. ISBN 81-7629-415-2.
57. Diven, S.; Rosencranz, A. *Environmental Law and Policy in India*; Oxford University Press: New Delhi, India, 2001; pp. 132, 133, 134.
58. Sedler, R.A. *Ethiopian Civil Procedure*; Faculty of Law, Haileselassie I University, The Oxford University Press: Addis Ababa, Ethiopia, 1968; p. 52.
59. Brans, E. *Liability for Damage to Public Natural Resources: Standing, Damage and Damage Assessment*; Kluwer Law International: London, UK, 2001; p. 14, 49. ISBN 90-411-1724-5.
60. Hydervali, B. Public interest litigation introduction. *Indian Law Inst.-Tamilnadv Unit J. Sect. Mon. Legal J.* **1989**, *37*, 38.
61. Desai, A.; Muralidham, S. *Public Interest Litigation: Potential and Problems*; Oxford University Press: New Delhi, India, 2000; Volume 3, p. 15.
62. Dhanan, H. Whose Law? Whose Interest? In *Public Interest Law*; 1986; p. 40. (In press)

63. Bonine, J. Standing to Sue: The First Step in Access to Justice. 1999. Available online: www.elwa.org/asset/pdf/us.windener.law.rev.jb (accessed on 23 January 2014).
64. Hilson, C. The visibility of environmental rights in the EU legal order: Eurolegalism in action? *J. Eur. Public Policy* **2017**. [CrossRef]
65. Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation of Ethiopia. *Environmental Policy of Ethiopia (EPE)*; no. 2.2(h); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1997.
66. UN 'Rio Declaration on Environment and Development' (1992). Principle 10. Available online: www.un.org/documents/ga/conf151/aconf15126-1annex1.htm (accessed on 30 April 2018).
67. Fasil, N. *Constitution for A Nation of Nations: The Ethiopian Prospect*; Red Sea Press: Asmera, Eritrea, 1997; p. 150. ISBN 1-56902-050-7.
68. Federal Environmental Protection Organs Establishment Proclamation; No. 295/2002, No. 7, 2002, Article 5, 6.
69. Campbell-Mohn, C.; Breen, B.; Futrell, J.W. *Environmental Law from Resource to Recovery*; West Group: Eagan, MN, USA, 1993; p. 34, ISBN-13: 978-0314022295.
70. Rodgers, W.H. *Handbook on Environmental Law*; West Publishing Co.: Eagan, MN, USA, 1977; p. 75.
71. Federal Courts Proclamation; No. 25/1996, No. 13, 1996, Article 5, 6, 7, 14, 20, 23.
72. Addis Ababa City Government Revised Charter Proclamation; No. 39/2011, No. 24, 2011, Article 39, 40, 41(1) (b).
73. Federal High Court of Ethiopia. *Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia*; Civil File No. 62904; Federal High Court: Addis Ababa, Ethiopia, 12 June 2008.
74. Federal Supreme Court Cassation Division of Ethiopia. *Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia*; Civil File No. 51052; Federal Supreme Court: Addis Ababa, Ethiopia, 3 December 2008.
75. Revised Constitution of Ethiopia; 1/1955, No 2, 1955, Article 192.
76. Lawrence, B.M. Standing for Environmental Groups: An Overview and Recent Developments in the D.C. Circuit (1989). Available online: https://elr.info/sites/default/files/articles/19.10289.htm (accessed on 2 July 2018).
77. Charities and Societies Proclamation; No. 621/2009, No. 25, 2009, Article 2, 14.
78. Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia (Amendment) Proclamation; No. 803/2013, No. 61, 2013, Article 4(33).
79. Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation of Ethiopia. *The Conservation Strategy of Ethiopia Volume III: Institutional Framework and Operational Arrangements*; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1996.
80. Waste Management, Collection and Disposal Regulation of the Addis Ababa City Administration Government Regulation; No. 13/2004, No. 29, 2004, Article 25.
81. Regulation to Determine and Collect the Sanitary Service Tariff of the Addis Ababa City Government; No. 25/2009, No. 25, 2009, Article 3, 5,6.
82. The Addis Ababa City Government Executive and Municipal Service Organs Re-establishment Proclamation; No. 35/2012, No. 35, 2012, Article 53, 55, 58, 59.
83. Addis Ababa Water and Sewerage Authority Re-establishment Proclamation; No. 10/1995, No. 3, 1995, Article 5, 7, 14.
84. The Addis Ababa Water Supply and Sewerage Disposal Services Regulations no. 5/1995 (Repealing) Regulations; No. 31/2002, No. 1, 2002, Article 6, 39, Schedule I and III.
85. Addis Ababa Cleanliness Administration Agency. *Addis Ababa Cleanliness Administration Agency Sanitation Service Delivery Standard*; AACAA: Addis Ababa, Ethiopia, 2014.
86. *Addis Ababa Cleanliness Administration Agency (AACAA) Annual Report of 2015*; AACAA: Addis Ababa, Ethiopia, 2015.
87. *Addis Ababa Cleanliness Administration Agency (AACAA) Annual Report of 2016*; AACAA: Addis Ababa, Ethiopia, 2016.
88. *Addis Ababa Cleanliness Administration Agency (AACAA) Annual Report of 2017*; AACAA: Addis Ababa, Ethiopia, 2017.

89. *Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) Annual Report of 2015*; AASWRDPO: Addis Ababa, Ethiopia, 2015.
90. *Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) Annual Report of 2016*; AASWRDPO: Addis Ababa, Ethiopia, 2016.
91. *Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) Annual Report of 2017*; AASWRDPO: Addis Ababa, Ethiopia, 2017.
92. Researcher's Video Record-Based Observation of Repi Landfill (Addis Ababa, Ethiopia, 16 April 2014).
93. Researcher's Video Record-Based Observation of Kaliti Waste Water Treatment Plant ((Addis Ababa, Ethiopia, 28 March 2014).
94. Researcher's Video Record-Based Observation of Kotebe Waste Water Treatment Plant (Addis Ababa, Ethiopia, 25 December 2015).
95. Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation; No. 691/2010, No. 1, 2010, Article 10.
96. Federal Environmental Impact Assessment Proclamation (FEIAP); No. 299/2002, No. 11, 2002, Article 14.
97. Federal Environmental Protection Authority of Ethiopia (FEPAE), Letters of Delegation of the Power to Review EIA to Sectoral Institutions (Addis Ababa, Ethiopia, 14 November 2009).
98. Gebregiorgs, M.T. Administrative Powers of the Federal Environmental Protection Authority of Ethiopia in the Protection of the Environment: The Law and the Practice. Master's Thesis, University of Addis Ababa, Institute of Development and Research, Addis Ababa, Ethiopia, 2010; pp. 51, 83.
99. Federal Democratic Republic of Ethiopia Environmental Protection Authority, (Letter to the Addis Ababa Environmental Protection Authority, Ref. no. 8/1.1/1089, 25/02/2012.
100. Federal Democratic Republic of Ethiopia Environmental Protection Authority, Letter to the Ministry of Trade of Ethiopia, Ref. No. 8/1.1/2245, 08/08/2012.
101. Ethiopian Federal Water Resources Management Proclamation; No. 197/2000, No. 25, 2000, Article 11, 13, 20, 22.
102. Ethiopian Water Resources Management Regulation; No. 115/2005, No. 27, 2005, Article 5, 11, 12, 13, 14, 32.
103. Addis Ababa Water and Sewerage Authority. *Environmental and Social Impact Assessment of Waste Water Treatment Plant and Sewer Line Expansion and Rehabilitation in the Kaliti Catchment*; Addis Ababa Environmental Protection Authority: Addis Ababa, Ethiopia, 2014.
104. Researcher's Video Record-Based Observation of Akaki River (Addis Ababa, Ethiopia, 17 June 2014).
105. Federal Environmental Protection Authority of Ethiopia (FEPAE). *Survey on Environmental Pollution Impact on Akaki and Mojo Rivers*; FEPAE: Addis Ababa, Ethiopia, 2006.
106. Addis Ababa City Government Environmental Pollution Control Regulation; No. 25/2007, No. 56, 2007, Article 27(1) and (2).
107. African Charter on Human and Peoples' Right, Adopted on June 27, 1981, OAU Doc. 1982, Article 50, 55, 56.

sustainability

IMPACT FACTOR 2.075

CERTIFICATE of PUBLICATION

Certificate of publication for the article titled:

The Role of Public Interest Litigation in the Achievement of Sustainable Waste Management in Ethiopia

Authored by:

Merhatbeb Teklemedhn Gebregiorgs

Published in:

Sustainability **2018**, Volume 10, Issue 12, 4735

MDPI Academic Open Access Publishing since 1996

Chapter Six:
Conclusion of the Research

6. Conclusion of the Research

Ethiopia is committed to a federal system,[1] the idea of sustainable development,[2] sustainable waste management,[3] the polluter-pays principle[4] and public interest litigation within the context of environmental justice.[5]

Simultaneously, the government has the duty to develop a national environmental liability and compensation regime and to introduce incentives/disincentives to discourage practices that may hamper the sustainable use of natural resources and/or the prevention of environmental degradation/pollution.[6] Moreover, each of its urban administrations has the duty to ensure a sanitary service charge-based integrated waste management system.[7]

---

1 The Constitution of the Federal Democratic Republic of Ethiopia, Proclamation (FDREC) no 1/1995, Neg. Gaz., 1st Year, no 1 Art 1 and 50(1).

2 FDREC (n11) Art 43(1) (3); Environmental Policy of Ethiopia (EPE) (1997) no 2.1, 2.3 (c), (d), (k); National Conservation Strategy Volume II (NCS II) (1996) no 1.1; Ethiopian Water Resources Management Policy (EWRMP) (2001) at 1(1.1), 1.2(1) and (5), 1.3, 2.2.2 (c)(1), 2.3.1.2 (4); Ethiopian Water Sector Strategy (EWSS) (2001) at 1, 17; The National Energy Policy of Ethiopia (NEPE) (1993), no 3.6, 4.6, 5.6; Federal Environmental Protection Organs Establishment Proclamation (FEPOEP), no 295/2002, Neg. Gaz., 9th Year, no 7, Art 5; Federal Environmental Impact Assessment Proclamation (FEIAP), no 299/2002, Neg. Gaz., 9th Year, no 11, Preamble; Federal Pollution Control Proclamation (FPCP), no 300/2002, Neg. Gaz., 9th Year, no 12, Preamble; Federal Standards for Industrial Pollution Control in Ethiopia (FSIPCE) (2011) at 1; Urban Planning Proclamation (UPP), no 574/2008, Neg. Gaz., 14th Year, no 29, Preamble, Art 5(10); Access to Genetic Resources and Community Knowledge, and Community Rights Proclamation (AGRCKCRP) Preamble, Art 3 and 13; Fisheries Development and Utilization Proclamation (FDUP), no 315/2003, Neg. Gaz., 9th Year, no 32, Preamble; Code of Practice of the Floriculture Sector Council of Ministers Regulation (CPFSCMR), no 207/2011, Neg. Gaz., 17th Year, no 74, Preamble, Art 3; Public Health Proclamation (PHP), no 200/2000, Neg. Gaz., 8th Year, no 33, Preamble; Growth and Transformation Plan II of Ethiopia Volume I: Main Text (GTPE II) (2015/16-2020/21); Addis Ababa Administration Growth and Transformation Plan II (AAA GTP II) (2015/16-2020/21). Moreover, 'all international agreements ratified by Ethiopia are an integral part of the law of the land.' FDREC (n11) Art 9(4) and 43(3).

3 'The 2030 agenda for sustainable development' (2015) (2030 Agenda for SD), Goal 6 at 12, available at *https://www.un.org*, accessed on 30 April 2018; GTPE II (n12) at 77 and 113; AAA GTP II (n12) at 39. The 2030 Agenda for SD was one of the bases for the formulation of GTP II. Ibid at ix, 76 and 77.

4 EPE (n12) 2.2 (d), 4.6, (a), 2.3 (g); Natural Resources Development and Environmental Protection Strategy and Major Programmes (NRDEPSMP) (1994), no 4.2, 4.2.1, 20; NCS II (n12) no 2.4(79) (g); FPCP (n12) Art 3(4) and 17; Addis Ababa City Government Environmental Pollution Control Regulation (AAEPCR), no 25/2007, Addis Neg. Gaz., 4th Year, no 56, Art 4(4), 14(4) and 22; Solid Waste Management Proclamation (SWMP), no 513/2007, Neg. Gaz., 13th Year, no 13, Art 16.

5 FDREC (n11) Art 37(2); FPCP (n12) Art 11; Prevention of Industrial Pollution Council of Ministers Regulation (PIPCMR), no 159/2008, Neg. Gaz., 15th Year, no 14, Art 10.

6 Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia (Amendment) Proclamation (DPDEOFDREA), no 803/2013, Neg. Gaz., 19th Year, no 61 Article 4 (33) (1)(k); Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation (DPDEOFDRE), no 691/2010, Neg. Gaz., 17th Year no 1; FEPOEP (n12) Art 6(12).

7 FDREC (n11) Article 100(2). 'Fees and Charges means a payment made by users to public bodies for the supply of goods, rendering of services and use of facilities; and does not include fines and penalties.' Addis Ababa City Government Financial Administration Regulation (AAFAR), no 39/2011, Addis Negarit Gazeta (Addis Neg. Gaz.), 3rd Year, no 39, Article 2(6); See also A Regulation of Revenue Authority of Addis Ababa City Administration (AARAR), no 17/2009, Addis Neg. Gaz., 1st Year, no 17, Article 2(5); FPCP (n12) Art 5(1); See 'Municipal Service' in Addis Ababa City Government Revised Charter Proclamation (AACGRCP), no 361/2003, Addis Neg. Gaz., 9th

Nevertheless, at the moment, Ethiopia in general and the Addis Ababa Administration (AAA) in particular are subject to:

1. Solid waste,[8] sewage[9] and effluent mismanagement,[10]
2. Air pollution[11] and natural resource degradation[12] and
3. Public budget allocation for the social costs borne by their public authorities for pollution prevention and control.[13]

Thus, this research was designed *to assess the viability of greening the Ethiopian tax system at the confluence of environmental justice and development, i.e. at the point of sustainable development.*

In this research, *greening the Ethiopian tax system at the confluence of environmental justice and development was considered to be viable* when:

1. The introduction of environmental taxes to Ethiopia has distributive and incentive roles,

---

Year, no 86, Preamble, Article 2(4); See 'Sanitary Service' in Waste Management, Collection and Disposal Regulation of the Addis Ababa City Administration Government Regulation (AAWMCDR) no 13/2004, Addis Neg. Gaz., 2nd Year, no 29, Article 2(2); See also SWMP (n14) Art 4; EWRMP (n12) at 7.

8 Addis Ababa Cleanliness Administration Agency Solid Waste Policy (AACAASWP) (1995) at 1; Camilla Louise Bjerkli 'Governance on the ground: A study of solid waste management in Addis Ababa, Ethiopia' (2013) 37.4 IJURR at 1277 and 1278, available at *https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1468-2427.2013.01214.x, accessed on 30 April 2018*.

9 Addis Ababa Water and Sewerage Authority, Waste Water Treatment and Reuse Sub-Process 2015 Annual Report (AAWSA WWTRSP 2015 AR); Addis Ababa Water and Sewerage Authority, Waste Water Treatment and Reuse Sub-Process 2016 Annual Report (AAWSA WWTRSP 2016 AR); Addis Ababa Water and Sewerage Authority, Waste Water Treatment and Reuse Sub-Process 2017 Annual Report (AAWSA WWTRSP 2017 AR).

10 Environmental Protection Authority 'National report of Ethiopia: UN conference on sustainable development' (Rio+20) (UN CSD Rio+20 NRE) (2012) 64, available at *https://sustainabledevelopment.un.org/content/documents/973ethiopia.pdf, accessed on 30* April 2018*;* EWRMP (n12), Introduction; Ministry of Environment, Forest and Climate Change of Ethiopia, Assessment on Industrial Pollution and their Environmental, Economic and Social Impact (2014) (MEFCCE AIPEESI); Ministry of Industry of Ethiopia, Summary of Review Works on Environmental Management Practices of Selected Industries in Ethiopia (2014) (MIE SRWEMPSIE); Tsegai Brhane Gebretekle *Industrial Pollution Control and Management in Ethiopia: A Case Study on Almeda Factory and Sheba Leather Industry in Tigrai National Regional State* (unpublished PhD dissertation, University of Warwick School of Law, 2015), available at *wrap.warwick.ac.uk/67913/1/WRAP_THESIS_Ghebretekle_2015.pdf*, accessed on 29 April 2018; Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No 64902, Federal First Instance Court, Feb. 28, 2007).

11 Ethiopia's Climate Resilient Green Economy: Green Economy Strategy (ECRGES) (2011) 11; Ethiopia Millennium Development Goals Report (EMDGR) (2012) 42; UN CSD Rio+20 NRE (n20) at 64.

12 EPE (n12) 1.1.

13 Federal Budget Proclamations; Addis Ababa City Government 2006 E.C. Fiscal Year Budget Proclamation (AACG 2006 E.C. FY BP), no 31/2013, Addis Neg. Gaz., 4th Year, no 39, at Table 2 no 221, 523 and 524; Addis Ababa City Government 2007 E.C. Fiscal Year Budget Proclamation (AACG 2007 E.C. FY BP), no 41/2014, Addis Neg. Gaz., 6th Year, no 41, at Table 2 no 221, 523 and 524; Addis Ababa City Government 2008 E.C. Fiscal Year Budget Proclamation (AACG 2008 E.C. FY BP), no 44/2007 E.C., Addis Neg. Gaz., 7th Year, no 44, at Table 2 no 221, 523 and 524; Addis Ababa City Government 2009 E.C. Fiscal Year Budget Proclamation (AACG 2009 E.C. FY BP), no 47/2016 G.C., Addis Neg. Gaz., 8th Year, no 47, at Table 2 no 221, 523 and 524.

2. There is cautious design of the source, base, scope and rate of environmental taxes,
3. There is administrative feasibility for the implementation of environmental taxes, and
4. There is public interest litigation that encourages the federal and regional environmental protection and management organs of Ethiopia to implement environmental tax within the context of environmental justice.

Accordingly, subject to the central empirical qualitative method, the objective of this research was to appraise the:

1) Instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle in Ethiopia,
2) Viability of the design of solid waste, landfill, sewerage service and effluent charges in the achievement of sustainable waste management in Ethiopia,
3) Administrative feasibility of the introduction of environmental tax in the implementation of the polluter-pays principle in Ethiopia and
4) Role of public interest litigation in encouraging the federal and regional environmental protection and management organs of Ethiopia to implement environmental tax and the command-and-control instruments of the polluter-pays principle as means of achieving sustainable waste management in Ethiopia.

Accordingly, the first article[14] examined the instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle in Ethiopia. It is a single country case-oriented comparative research design, and data triangulation is the method used to establish the validity of the findings. Its specific research questions were: (1) What are the different meanings and functions of polluter-pays to reach the idea of sustainable development? (2) What are the technical justifications for the introduction of environmental tax? (3) What are the instrumental roles of the introduction of solid waste, sludge and sewer charges, effluent charges, carbon tax and cap-and-trade, consumption taxes and royalties in the realisation of the polluter-pays principle in Ethiopia? Correspondingly, it first showed the recognition of polluter-pays as a principle, rule and policy, with their respective different meanings and functions, to reach the idea of sustainable development. Secondly, it verified the degradation/pollution-based redistributive and incentive functions of the polluter-pays principle. Thirdly, it indicated the

14 See details in Gebregiorgs 'What are the instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle in Ethiopia?'(2016) *SAJELP* 22.

variations of the threshold-bound distributive and incentive bases of environmental tax according to the redistributive or incentive functions of the polluter-pays principle. Fourthly, it demonstrated the instrumental roles of: (1) Municipal and treated hazardous solid waste, sludge and sewer charges in covering the cost of their collection, transportation, treatment and disposal; (2) Effluent charges in restoring authorised water resources degradation; (3) Carbon tax and cap-and-trade in restoring authorised air degradation; (4) Consumption taxes in reinforcing an environmentally friendly pattern of consumption and (5) Royalties in encouraging rational use of scarce natural resources. Finally, it implied that the polluter-pays principle is contingent on setting up a range of legally viable and administratively feasible environmental taxes.

Subsequently, the second article[15] assessed the viability of the design of the source, base, scope and rate of solid waste, landfill, sewerage service and effluent charges in the achievement of sustainable waste management in the Addis Ababa Administration of Ethiopia. It employed an empirical qualitative methodology, and data triangulation is the method used to establish the validity of the findings. Its specific research questions were how viable is the design of the source, base, scope and rate of: (1) Solid waste and landfill charges in the achievement of sustainable solid waste management; (2) Sewerage service charges in the achievement of sustainable sewerage service, and (3) Effluent charges in the achievement of the sustainable restoration of authorised water resources degradation in the AAA of Ethiopia? In this research, the source of environmental tax is subject to the principle of legality as long as it is set up by legislative acts; the scope of an environmental tax in a federal system is appropriate when it is as broad as the scope of the waste being addressed and it is consistent with the fiscal needs of the federal and regional waste management organs. The base of an environmental tax is considered to be efficient when it is targeted to the waste or waste-generating behaviour, which helps to incentivise the full range of waste abatement options and can contribute to specification of an optimal tax rate. The rate of environmental tax is considered optimal when it is commensurate with the cost of waste management and it creates an incentive for the realisation of sustainable waste management. Correspondingly, this research first indicated Ethiopia's commitment to a federal system, sustainable waste management, the polluter-pays principle and the distributive and incentive roles of environmental taxes. Secondly, it showed that waste management is one the goals of sustainable

15 See details in M.T. Gebregiorgs 'Towards sustainable waste management through cautious design of environmental taxes: The case of Ethiopia' (2018) *Sustainability*.

development and it is applicable both in developed and least developed countries. Thirdly, it displayed the mutual contribution of the achievement of waste management to the progress of sustainable sanitation and water resource management. Fourthly, it showed the distributive and incentive roles of environmental taxes in the achievement of sustainable waste management. Fifthly, it indicated that cautious design of the source, base, scope and rate of environmental taxes is a critical determinant for environmental taxes' overall success in addressing the prevalent waste mismanagement in Ethiopia.

This research, having the foregoing benchmark findings in its normative framework, assessed the viability of the design of the source, base, scope and rate of solid waste, landfill, sewerage service and effluent charges in the practical achievement of sustainable waste management in the Addis Ababa Administration. Consequently, it demonstrated that:

(1) The sources of solid waste, landfill, sewerage service and federal effluent charges are set up by legislative acts, and in turn their sources are subject to the principle of legality, and there is no ground for environmental taxation without representation;

(2) The scope of solid waste, landfill, sewerage service and federal effluent charges is as broad as the scope of the waste being addressed, and it is consistent with the fiscal needs of the federal and the Addis Ababa Administration waste management organs, and in turn their scope is appropriate;

(3) Sludge and effluent are targeted as the bases of the sludge dislodging and federal effluent charges, respectively. So the sludge dislodging and federal effluent charges' bases efficiently target the waste, which helps to incentivise the full range of sludge and effluent abatement options and can contribute to specification of their optimal rate;

(4) Water consumption, which is a close proxy of sewage, is targeted as the base of the sewer service charge. Thus, the base of the sewer service charge by and large efficiently targets the sewage-generating behaviour, which helps to incentivise the full range of sewage abatement options and can contribute to specification of its optimal rate;

(5) Water consumption is taken as the base of solid waste and landfill charges. So the base of solid waste and landfill charges does not at all efficiently target the waste or waste-generating behaviour and thus does not help to incentivise the full range of solid waste abatement options, nor does it contribute to specification of their optimal rate;

(6) The rates of solid waste, landfill and sewerage service charges make only a nominal contribution to the cost of solid waste and sewage management, and they barely create an incentive for the residents of the AAA to sustainably manage their solid waste and sewage, and as such their rates are slightly optimal; and

(7) Because Ethiopia has not yet developed the rate of the federal effluent charge, the federal effluent charge neither internalises the cost of trans-regional water resource degradation nor incentivises the polluters to sustainably manage their effluent.

As a corollary, the study concluded that, having a somewhat viable design, solid waste, landfill and sewerage service charges are marginally reinforcing the aspiration of Ethiopia to achieve sustainable sanitation. Correspondingly, the results imply that the aspiration of Ethiopia to achieve sustainable sanitation and water resource management by 2030 is contingent on the cautious design of its waste management taxes.

Then, the third article[16] examined the administrative feasibility of introducing an environmental tax system in the Addis Ababa City Administration (AAA) of Ethiopia. It employed an empirical qualitative methodology, and data triangulation is the method used to establish the validity of the findings. Its specific objective was to access the administrative feasibility of solid waste, landfill, sludge, sewer, effluent and emission taxes. Concurrently, in this research, introducing an environmental tax is administratively feasible when five critical conditions exist. The first condition is that environmental standard formulation, environmental impact assessment, permit, regulation, municipal waste management and tax mandates must conform to the paradigms of common but differentiated responsibilities-based environmental and fiscal federalism. The second condition is that environmental governance must accommodate public-private partnerships. The third condition is the existence of effective solid waste, landfill, sludge, sewer, effluent and emission tax collection systems. The fourth is the existence of environmentally friendly collection, treatment and disposal for municipal and hazardous solid waste, sludge cake, industrial effluent and sewer and sludge-based waste. And lastly, the fifth condition is the existence of an operational permit system for hazardous solid waste transportation and disposal, sewer use, effluent disposal and emission release. Correspondingly, it first showed that while the standard

16 See details in M.T. Gebregiorgs 'Introducing an administratively feasible environmental tax system in Ethiopia' (2018) *JELL* 33.

formulation, Environmental Impact Assessment (EIA), permit and regulatory mandates of the Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE) are consonant with environmental federalism, the overlap of its standard formulation mandate with the Ethiopian Standards Agency (ESA), the delegation of part of its EIA mandate to sectoral institutions and the delegation of its permit and regulatory mandates to the Addis Ababa Environmental Protection Authority (AAEPA) are respectively susceptible to duplication of effort, sectoral conflict of interest and inter-state conflict of interest. Secondly, it verified that while the standard formulation, EIA, permit and regulatory mandates of AAEPA are consonant with common but differentiated responsibilities-based environmental federalism, its delegated permit and regulatory mandates over federal entities are open to inter-state conflict. Thirdly, it indicated that while the permit and effluent charging mandates of the Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE) are consonant with common but differentiated responsibilities-based environmental and fiscal federalism, the delegation of its regulatory power to AAEPA is vulnerable to inter-state conflict of interest. Fourthly, it verified that the municipal waste management and environmental tax mandates of the Addis Ababa Administration (AAA) are consonant with common but differentiated responsibilities-based environmental and fiscal federalism. Fifthly, it revealed that while the tax mandates of the Ethiopian Revenues and Customs Authority (ERCA) and the Addis Ababa Revenue Authority (AARA) are consonant with fiscal federalism, the delegation of the entire mandates of AARA to the Ethiopian Revenues and Customs Authority (ERCA) is anomalous to the paradigm of decentralisation. Sixthly, it showed that while the environmental governance accommodates the paradigms of environmental Public-Private Partnership (PPP), in practice PPP is in its infant stage. Seventhly, it demonstrated that: (1) While there is poor solid waste collection and only partially effective sludge dislodging service, there is insignificant sewer service; (2) While there is a partly enabling collection system for solid waste, landfill and sludge taxes, there is none for sewer, effluent and emission taxes; (3) While the municipal and hazardous solid waste, sludge cake and industrial effluent treatment and disposal systems are environmentally unfriendly, the sewer and sludge-based waste water treatment and disposal system is partially environmentally friendly; and (4) While there is an operational permit system for sewer use and overtly hazardous solid waste transportation and disposal, there is no active one for covert hazardous solid waste, effluent and emission. Eighthly, it found that environmentally friendly landfill and transfer stations, sewer lines and waste water treatment plants are currently being

constructed. Ninthly, it concluded that while solid waste, landfill, sludge and sewer taxes are to some extent administratively feasible at the moment, effluent and emission taxes are not yet so. Finally, it implied that in the future a full-fledged crystallisation of the administrative feasibility of the introduction of environmental tax in the implementation of the polluter-pays principle in Ethiopia is contingent on the realisation of common but differentiated responsibilities-based environmental and fiscal federalism; development of environmental technocrats; best use, gradual phasing in and restructuring of the existing environmental institutions, infrastructures and public-private partnership and the adoption of new ones.

Correspondingly, the fourth article[17] assessed the role of public interest litigation in the achievement of sustainable waste management in the AAA of Ethiopia. It employed a single country case-oriented comparative research design, and data triangulation is the method used to establish the validity of the findings. The following research questions were set to be addressed: Taking into account past and present cases as well as the potential future prospects of this technique, can public interest litigation play an effective role in combating unsustainable waste management? What are the main obstacles to environmental public interest litigation? In this context, the effectiveness of this technique refers to the potential for encouraging environmental protection and management organs to implement the environmental tax and command-and-control instruments of the polluter-pays principle. Correspondingly, it first showed Ethiopia's commitment to sustainable waste management, the polluter-pays principle and public interest litigation within the context of environmental justice. Secondly, it indicated Ethiopia's recognition of taxation and command-and-control instruments as two complementary policy mix instruments of the polluter-pays principle. Thirdly, it showed that public interest litigation is one of the innovative techniques in a struggle against waste mismanagement. Fourthly, it revealed that the application of public interest litigation in combating unsustainable waste management is not context-specific, and it can be stretched across all legal systems. Fifthly, it showed that environmental courts and tribunals are technically viable to flexibly and innovatively adopt public interest litigation in the context of environmental justice. Sixthly, it demonstrated the potential role of public interest litigation in Ethiopia for: (1) Encouraging the federal and regional environmental

17 See details in M.T. Gebregiorgs 'The role of public interest litigation in the achievement of sustainable waste management in Ethiopia' (2015) partly published in *Mekelle University Cultural Landscapes of Ethiopia Conference Proceedings (MU CLECP)* 2.

protection and management organs to implement environmental tax and command-and-control instruments; (2) Safeguarding diffused environmental interests; (3) Realising full-fledged environmental action and remedies; (4) Reviewing the constitutionality of environmental issues; and (5) Challenging the state's failure in the African Commission on Human and Peoples' Rights. Seventhly, it uncovered that public interest litigation is not fully compatible with the Civil Procedure Code of Ethiopia. Eighthly, it showed the failure of the judiciary system of Ethiopia to accommodate environmental courts and tribunals that flexibly and innovatively adopt public interest litigation. Ninthly, it revealed that in Ethiopia the scope of public interest standing is highly restrictive for Civil Society Organisations. Finally, it implied that the legal viability and administrative feasibility of environmental public interest litigation in Ethiopia is in its infancy, and its crystallisation is partly contingent on the cautious review of the Civil Procedure Code and CSO laws and on greening the judiciary system.

Finally, the research has implied that the viability of greening the Ethiopian tax system at the confluent of environmental justice and development is nascent, and its crystallisation is contingent on the gradual phasing in and restructuring of the existing environmental taxes and the adoption of new ones as well as the realisation of fiscal federalism, an increased reliance on environmental expertise, expansion of public-private partnership, the improvement of existing environmental institutions and infrastructures and the implementation of public interest litigation within the context of environmental justice.

Bibliography[1]

Books and Articles

Abu, G. An economic analysis of fiscal federalism in Ethiopia. In Proceedings of the International Conference on Development Studies in Ethiopia, Addis Ababa, Ethiopia, 11–12July2003. Available online: http://scholarworks. wmich.edu/africancenter_icad_archive/60 (accessed on 13 June 2016),

Abu, G. Fiscal Federalism in Theory and Practice' (2013). Available online: www.nesglobal.org/eejrif4/index.php?journal=admin&page (accessed on 21 June 2015),

Alm, J.; Banzhaf, H.S. Designing economic instruments for the environment in a decentralized fiscal system. J. Econ. Survey 2012, 26,

Jordan, A.; Wurzel, R.; Zito, A. New instruments of environmental governance: Patterns and pathways of change. Environmental Politics 2003, 26(2). Available online <doi: 10.1080/714000665> (accessed on 20 November 2015),

Ashford, N. A.; Caldart, C. C. *Environmental Law, Policy, and Economics: Reclaiming the Environmental Agenda*; MIT Press: London, England, 2008, ISBN 978-0-262-01238-6,

Ashford, N.A.; Caldart, C.C. Environmental Law, Policy, and Economics: Reclaiming the Environmental Agenda; MIT Press: London, UK, 2008; ISBN 978-0-262-01238-6,

Barde, J.-P. Economic Instruments in Environmental Policy: Lessons from the OECD Experience and Their Relevance to Developing Economies; Working Paper No. 92; OECD: Paris, France, 1994,

Bell, S.; McGillivray, D. Environmental Law, 7th ed.; Oxford University Press: New York, NY, USA, 2008; ISBN 978-0-19-921102-9,

Bhatia, H.L. Public Finance, 19th ed.; Vikas Publishing House PVT Ltd.: New Delhi, India, 1998,

Bjerkli, C.L. Governance on the ground: A study of solid waste management in Addis Ababa, Ethiopia. IJURR 2013, 37,

Bonine, J. 'Standing to sue: the first step in access to justice' (1999). Available online: www.elwa.org/asset/pdf/us.windener.law.rev.jb (accessed on 23 January 2014),

Bosselmann, K. The Principles of Sustainability: Transforming Law and Governance; Ashgate Publishing Limited: Hampshire, UK, 2008; ISBN 978-0-7546-7355-2,

[1] The Bibliography is developed on the basis of reference writing style of the Journal of Sustainability.

Brans, E. *Liability for Damage to Public Natural Resources: Standing, Damage and Damage Assessment*; Published by Kluwer Law International: London, UK, 2001; ISBN 90-411-1724-5,

Brian J. Preston. Benefits of judicial specialization in environmental law: the land and environment court of New South Wales as a case study. *Pace Environmental Law Review 396* 2012, 29. Available online: http://digitalcommons.pace.edu/pelr/vol29/iss2/2 (accessed on 4 July 2018),

Browine, I. *Principles of Public International Law*, 2nd ed.; Clarendon Press: Oxford, UK, 1973,

Bryman, A. *Social Research Methods*, 4th ed.; Oxford University Press: New York, USA, 2012; ISBN 978–0–19–958805–3,

Campbell-Mohn, C.; Barry Breen, B.; Futrell, J. William. *Environmental Law from Resource to Recovery*; Published by West Group: Minnesota, USA, 1993; ISBN-13: 978-0314022295,

Chalifour, N.; Grau-Ruiz, M.A; and Traversa, E. Multilevel governance: the implications of legal competences to collect, administer and regulate environmental tax instruments. In Handbook of Research on Environmental Taxation; Milne, J.E., Andersen, M.S., Eds.; Edward Elgar Publishing Limited: Cheltenham, UK, 2014; ISBN 978 1 78471 759 9,

Coomans, F. The Ogoni case before the African Commission on Human and Peoples' Rights. *International and Comparative Law Quarterly* 2003, 52. Available online: http://www.righttoenvironment.org/ip/uploads/downloads/OgoniCaseProf.Coomans.pdf (accessed on 29 June 2018),

Creswell, J. W. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 4th ed.; Sage Publications Ltd.: London, United Kingdom, 2014; ISBN 978-1-4522-2609-5. Available online: https://www.researchgate.net/file.PostFileLoader.html?id...assetKey... (accessed on 3 July 2017),

Cullet, P. Environment and development—The missing link. In International Economic Law, Globalization and Developing Countries; Faundez, J., Tan, C., Eds.; Edward Elgar: Cheltenham, UK, 2010; ISBN9781848441132,

Cummings, Scott L.; Rhode, Deborah L. Public interest litigation: insights from theory and practice. *Fordham Urb. L.J. 603* 2009, 36. Available online: https://ir.lawnet.fordham.edu/ulj/vol36/iss4/1 (accessed on 4 July 2018),

D'Amato, A.; Chopra, S. Whales: their emerging right to life. *American Journal of International Law* 1991, 21. Available online: http://anthonydamato.law.northwestern.edu/Adobefiles/A911.pdf (accessed on 27 June 2018),

Daniela Parvu, D.; Voicu-Olteanu, C. Advantages and limitations of the public–private partnerships and the possibilities of using them in Romania. Transylvanian Review of Administrative Sciences 2009, 27E. Available online: www.ucv.ro/pdf/invatamant/educatie/scoala_doctorala/pirvu.../2.pdf (accessed on 10 March 2016),

Duff, D. Benefit taxes and user fees in theory and practice. The University of Toronto Law Journal 2004, 54(4). Available online: https://www.jstor.org/stable/4144930 (accessed on 13 November 2018),

David O'Connor, D. Applying economic instruments in developing countries: From theory to implementation. Environment and Development Economics 1999, 4(1). Available online: <http://journals.cambridge.org/abstract_S1355770X99000078> (accessed on 22 June 2015),

Day, M. *Environmental Action: A Citizen Guide*; Pluto Press: London, UK, 1988; ISBN 10: 0745311903,

De Mello, L.R., Jr. Fiscal decentralization and intergovernmental fiscal relations: A cross-country analysis. World Dev. 2000, 28. Available online: http://biblioteca.unmsm.edu.pe/redlieds/recursos/archivos/ gestionestado/de%20mello.pdf (accessed on 30 May 2018),

De Sadeleer, N. Environmental Principles from Political Slogan to Legal Rules; Oxford University Press: New York, NY, USA, 2002; ISBN 978-0-19-928092-6,

Desai, A.; Muralidham, S. Public Interest Litigation: Potential and Problems, Oxford University Press: New Delhi, India, 2000,

Diven, S.; Rosencranz, A. *Environmental Law and Policy in India*; Published by Oxford University Press: New Delhi, India, 2001,

Fasil, N. Constitution for A Nation of Nations: The Ethiopian Prospect; Red Sea Press: Asmera, Eritrea, 1997; ISBN 1-56902-050-7,

Gaines, S.E.; Westin, R.A. Taxation for Environmental Protection: A Multinational Legal Study; Greenwood Publishing Group: Westport, CT, USA, 1991; ISBN 0-89930-575-X,

Hardin, G. The tragedy of the commons. Science, New Series 1968, 162(3859). Available online: www.environnement.ens.fr/IMG/pdf/hardin_1968.pdf (accessed on 8 June2016),

Gebregiorgs, M. T. The role of public interest litigation in the protection of the environment of Ethiopia: The law and the practice. (MU CLECP) Volume 2 2015;

Gebregiorgs, M. T. Towards sustainable waste management through cautious design of environmental taxes: the case of Ethiopia. *Sustainability* 2018b,

Gebregiorgs, M. T. What are the instrumental roles of the introduction of environmental tax in the realisation of the polluter-pays principle in Ethiopia? *SAJELP* 2016, 22,

Gebregiorgs, M.T. Introducing an administratively feasible environmental tax system in Ethiopia. JELL 2018, 33,

Gilpin, A. Dictionary of Environmental Law; Edward Elgar Publishing Limited: Cheltenham, UK, 2000; ISBN 1840641886,

Ginther, K. *Sustainable Development and Good Governance*; Martinus Nijhoff Publishers: Leiden, the Netherlands, 1995,

Gomez-Baggethun, E.; Ruiz-Perez, M. Economic valuation and the commodification of ecosystem services. Prog. Phys. Geogr.2011, 35. Available online: http://ppg.sagepub.com/content/35/5/613.refs.html (accessed on 8 June 2016),

Hilson, C. The visibility of environmental rights in the EU legal order: Euro legalism in action? *Journal of European Public Policy* 2017, DOI: 10.1080/13501763.2017.1329335. Available online: https://doi.org/10.1080/13501763.2017.1329335 (accessed on 3 July 2018),

Hussain, F. 1993. Public Interest Litigation in Pakistan. Working no. 5. Available online: https://www.sdpi.org/publications/files/W5-Public%20Interest%20Litigation.pdf (accessed on 2 July 2018),

Hydervali, B. Public interest litigation introduction. *Indian Law Institute-Tamilnadv Unit, Journal Section, Monthly Legal Journal* 1989,

Jaint, S. *Public Interest Litigation*; Deep and Deep Publications LTD: New Delhi, India, 2002; ISBN 81-7629-415-2,

Milne, J.E. Environmental taxes and fees: Wrestling with theory. In Environmental Taxation and Green Fiscal Reform Theory and Impact; Kreiser, L. et al, Eds.; Edward Elgar Publishing Limited: Cheltenham, UK, 2014; ISBN 978 1 78347 816 3,

Raz, J. Legal principles and the limits of law. Yale. L J 1972, 81. Available online: http://heinonline.org (accessed on 22 August 2011),

Joseph, S.-A. Environmental taxes—Definitional analysis: Behavioural change or revenue raising. In Environmental Taxation and Green Fiscal Reform Theory and Impact; Kreiser, L., Lee, S., Ueta, K., Milne, J.E., Ashiabor, H., Eds.; Edward Elgar Publishing Limited: Cheltenham, UK, 2014; ISBN 978 1 78347 816 3,

Bachaus, J.G. Increasing the role of environmental taxes and charges as a policy instrument in developing countries: Some conceptual considerations. American Journal of Economics and Sociology 2004, 63(5),

Khoday, K. Environmental justice: comparative experiences in legal empowerment. *UNDP* 2014, Available online: http://www.undp.org/content/dam/undp/library/Democratic%20Governance/Access%20to%20Justice%20and%20Rule%20of%20Law/Environmental-Justice-Comparative-Experiences.pdf (accessed on 9 June 2018),

Khoday, K.; Leisa, P. Green equity: environmental justice for more inclusive growth. International Policy Centre for Inclusive Growth 2012, 19. Available online: http://www.ipc-undp.org/pub/IPCPolicyResearchBrief19.pdf (accessed on 2 July 2018),

Kiss, A.; Shelton, D. Guide to International Environmental Law; Martinus Nijhoff: Leiden, The Netherlands, 2007; ISBN 13:978-1-57105-344-2,

Kolstad, C.D. Environmental Economics; Oxford University Press: Oxford, UK, 2010; ISBN 9780199732647,

Kosonen, K. Regressivity of environmental taxation: Myth or reality? In Handbook of Research on Environmental Taxation; Milne, J.E., Andersen, M.S., Eds.; Edward Elgar Publishing Limited: Cheltenham, UK, 2014; ISBN 978 1 78471 759 9,

Kothari, C.R. *Research Methodology Methods and Techniques*, 2nd ed.; New Age International (P) Ltd.: New Delhi, India, 2004, ISBN (13): 978-81-224-2488-1,

Goulder, L.H. Carbon taxes versus cap and trade: A critical review. Climate Change Economics 2013, 4(3),

M. Lawrence, B. Standing for Environmental Groups: An Overview and Recent Developments in the D.C. Circuit (1989). Available online: https://elr.info/sites/default/files/articles/19.10289.htm (accessed on 2 July 2018),

Massoud, M.; El-Fadel, M. Public–private partnerships for solid waste management services. Environmental Management 2002, 30,

Maekawa, F.; Macer, D. Anthropocentric, ecocentric, and biocentric views among students in Japan. *Institute of Biological Sciences, University of Tsukuba*. Available online: http://www.eubios.info/ABC4/abc4327.htm (accessed on 27 June 2018),

Markandya. A.; Perelet, R.; Mason, P.; Taylor, T. Dictionary of Environmental Economics; Earthscan Publications Ltd.: London, UK, 2002; ISBN 1-85383-529-3,

Botes, M. Should VAT not support the environment? International VAT Monitor 2012,

Mehret, A. The growth and transformation plan: Opportunities, challenges and lessons. In Reflection on Development in Ethiopia New Trends, Sustainability and Challenges; Dessalegn, R., Meheret, A., Asnake, K., et al, Eds.; Forum for Social Studies: Addis Ababa, Ethiopia, 2014; ISBN 9789994450527,

Murty, M.N. Market-based instruments for pollution abatement in India. In Economics of Environment and Development, 1st ed.; Kumar, P., Ed.; Ane Books: New Delhi, India, 2005; ISBN 10:8180520838,

Oates, W.E. A reconsideration of environmental federalism. In Recent Advances in Environmental Economics; List, J.A., de Zeeuw, A., Eds.; Edward Elgar: Cheltenham, UK, 2002; ISBN 978-1843760023,

Pearce, D. The Polluter Pays Principle, Briefing Papers on Key Issues in Environmental Economics. Gatekeeper Series No. LEEC 89-03. 2003. Available online: http://www.mekonginfo.org/assets/midocs/ 0002714-economy-the-polluter-pays-principle.pdf (accessed on 30 April 2018),

Sands, P. Principles of International Environmental Law, 2nd ed.; Cambridge University Press: Cambridge, UK, 2003; ISBN 0 521 81794 3,

Pigou, A.C. The Economics of Welfare, 1st ed.; Palgrave Macmillan: London, UK, 1932; ISBN 978-0230249318,

Planiol, M. Treatise on the Civil Law (Vol. I); St. Paul: West Publ. Col: St Paul the Apostle Church USA, 1959,

Pring, G.; Pring, C. Environmental Courts and Tribunals; UNON/Publishing Services Section: Nairobi, Kenya, 2016; ISBN: 978-92-807-3608-3. Available online:

http://wedocs.unep.org/bitstream/handle/20.500.11822/10001/environmental-courts-tribunals.pdf?sequence=1 (accessed on 11 June 2018),

Stavin, R.N. Cap-and-trade or a carbon tax?' The Environmental Forum 2008, 16,

Rodgers, W. H. *Handbook on Environmental Law*; West Publishing Co., Minnesota, USA, 1977,

Rodi, M.; Ashiabor, H. Legal authority to enact environmental taxes. In Handbook of Research on Environmental Taxation; Milne, J.E., Andersen, M.S., Eds.; Edward Elgar Publishing Limited: Cheltenham, UK, 2014; ISBN 978 1 78471 759 9,

Semie, S.M.; Fuo, O.N. Case study of municipal solid waste management in the Bamnda urban council area of Cameroon. SALJ 2010, 17,

Sedler, Robert Allen. *Ethiopian Civil Procedure*; Faculty of Law, Haileselassie I University, Addis Ababa: the Oxford University Press, 1968,

Shaw, M. *International law*, 4th ed.; Grotious Publications: Cambridge University Press, UK, 1997,

Shelton, D.; Kiss, A. Judicial Handbook on Environmental Law; United Nations Environment Programme: Nairobi, Kenya, 2005; ISBN 92-807-2555-6,

Siebert, H. Economics of the Environment Theory and Policy, 7th ed.; Springer: New York, NY, USA, 2008; ISBN 978-3-540-73706-3,

Snape, J.; de Souza, J. Environmental Taxation Law: Policy, Contexts and Practice; Ashgate Publishing Limited: Aldershot, UK, 2006; ISBN 0 7546 2304 1,

Speck, S. Options for promoting environmental fiscal reform in EC Development Cooperation, Country Report Uganda. 2010,

Stewart, R.B. Economic incentives for environmental protection: Opportunities and obstacles. In Environmental Law, the Economy, and Sustainable Development; Revesz, R.L., Sands, P., Stewart, R.B., Eds.; Cambridge University Press: Cambridge, UK, 2008; ISBN 0 521 64270 1,

Stone, Christopher D. Should trees have standing: toward legal rights for natural objects. *California Law Review* 1972, 45. Available online: https://iseethics.files.wordpress.com/2013/02/stone-christopher-d-should-trees-have-standing.pdf (accessed on 4 July2018),

Taddese, L. The Ethiopian tax system: Excesses and gaps. Mich. State Int. Law Rev. 2013, 20. Available online: https://digitalcommons.law.msu.edu/ilr/vol20/iss2/9 (accessed on 30 May 2018),

Tesfaye, A. Introduction to Law and the Ethiopian Legal System; Justice and Legal System Research Institute: Addis Ababa, Ethiopia, 2009. Available online: https://chilot.me/wp-content/uploads/2011/06/ introduction-to-law-and-ethiopian-legal-system.pdf (accessed on 30 May 2018),

Forsyth, T. Building deliberate public–private partnerships for waste management in Asia. Science Direct 2005, 36(4). Available online: www.sciencedirect.com (accessed on on 10 March 2016),

Tietenburg, T.; Lewis, L. Environmental and Natural Resource Economics, 9th ed.; Pearson Education, Inc.: London, UK, 2012; ISBN 10-13-139257-3,

Van Dijk Meine Pieter, V.D.; Tilay, M. Micro-privatization of solid waste collection in Addis Ababa. Waterlines 2013, 32(2),

Van Geel, O. Urgenda and beyond: the past, present and future of climate change public interest litigation. *Maastricht University Journal of Sustainability Studies* 2017. Available online: http://openjournals.maastrichtuniversity.nl/SustainabilityStudies/article/view/508/370 (accessed on 2 July 2018),

Vanderline, J. *The Law of Physical Persons*; Addis Ababa: Faculty of Law, Haile Sellassie I University: Addis Ababa, Ethiopia, 1969,

Vanistendael, F. Legal framework for taxation. In Tax Law Design and Drafting; Thuronyi, V., Ed.; International Monetary Fund: Washington, DC, USA, 1996; Volume 1 and 2, Available online: www.imf.org/ external/pubs/nft/1998/tlaw/eng/ (accessed on 13 June 2016),

Verschuuren, J. Climate change adaptation and environmental pollution control law. In Research Hand Book on Climate Change Adaptation Law; Verschuuren, J., Ed.; Edward Elgar Publishing Limited: Cheltenham, UK, 2013; ISBN 978 1 78100 007 6,

Verschuuren, J. Sustainable development and the nature of environmental legal principles. PELJ 2006, 9. Available online: https://ssrn.com/abstract=899537 (accessed on 30 May 2018),

Verschuuren, J. The growing significance of the principle of sustainable development as a legal norm. In Research Handbook on Fundamental Concepts of Environmental Law; Fisher, D., Ed.; Edward Elgar Publishing Ltd.: Cheltenham, UK, 2016; ISBN9781784714642.

Wolf, S.; Stanley, N. Environmental Law, 5th ed.; Routledge: New York, NY, USA, 2011; ISBN 10:0-203-84254-5,

Yu, M.; Lei, Y. Anthropocentric Ethical Theories: Relations with Non-Human Beings. Available online: https://www.eolss.net/Sample-Chapters/C13/E4-25-07-02.pdf (accessed on 29 June 2018),

Publications of National and International Organizations

Commission of the European Communities. Environmental Taxes and Charges in the Single Market; Office for Official Publications of the European Communities: Luxembourg, 1997; ISBN92-78-15312-5. Available online: aei.pitt.edu/4785/ (accessed on 30 April 2018),

The Social and Economic Rights Action Center and the Center for Economic, and Social Rights / Nigeria. Communication 155/96. Available online: www.achpr.org/files/sessions/30th/comunications/155.96/achpr30_155_96_eng.pdf (accessed on 28 June 2018),

European Commission. Directive 2008/98/EC on waste (Directive 2008/98/EC). Available online: http://ec.europa.eu/ environment/waste/framework/framework_directive.htm (accessed on 27 April 2018).

European Commission Environmental Taxes – Revised Statistical Guide (2013) 15-16,

European Commission Proposal for a Council Directive Restructuring the Community Framework for the Taxation of Energy Products (1997), COM (97)30 Final, Brussels,

European Commission, Manual: Statistics on Environmental Taxes, Version 3.0 (1996),

European Commission. Environmental Taxes: A Statistical Guide; Publications Office of the European Union: Luxembourg, 2013; ISBN 978-92-79-33230-2. Available online: http://ec.europa.eu/eurostat/documents/ 3859598/5936129/KS-GQ-13-005-EN.PDF (accessed on 1 June 2018).

European Environmental Agency (EEA) 'Environmental Taxes: Implementation and Environmental Effectiveness' (1996) <http://www.eea.europa.eu/publications> accessed 20 November 2015,

OECD. Council Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies (1972) C (72)128 (Final), A (4),

OECD. Council Recommendation on the Use of Economic Instruments in Environmental Policy (1991) C (90) (Final) 2.3,

OECD. Environmentally Related Taxes in OECD Countries: Issues and Strategies; OECD Publications Service: Paris, France, 2001; ISBN 92-64-18731-6. Available online: https://www.cbd.int/financial/fiscalenviron/g-fiscaltaxes-oecd.pdf (accessed on 30 May 2018),

OECD. Evaluating Economic Instruments for Environmental Policies (1997). Available online:

OECD. Implementation Strategies for Environmental Taxes (1996). Available online:

OECD. Taxation, Innovation and the Environment (2010). Available online: https://www.oecd.org/environment/tools-evaluation/48178034.pdf (accessed on 11 November 2018),

OECD. Environmental Taxation, a Guide for Policy Makers; OECD Publishing: Paris, France, 2011. Available online: https://www.oecd.org/env/toolsevaluation/48164926.pdf (accessed on 31 May 2018),

The International Bank for Reconstruction and Development (IBRD)/The World Bank (WB) (IBRD/WB). Environmental Fiscal Reform What Should Be Done and How to Achieve It; The International Bank for Reconstruction and Development/The World Bank: Washington, DC, USA, 2005. Available online: http://siteresources. worldbank.org/INTRANETENVIRONMENT/Publications/20712869/EnvFiscalReform.pdf (accessed on 31May2018),

United Nations Environment Programme (UNEP). The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges, 1st ed.; United Nations Publications; UNEP: Nairobi, Kenya, 2004; ISBN 92-807-2391-X. Available online: https://unep.ch/etu/publications/Economic_Instrument_Opp_ Chnall_final.pdf (accessed on 31 May 2018),

United Nations Committee for Development Policy, List of Least Developed Countries (UN CDP LLDC) (as of March 2018). Available online: https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf (accessed on 29 June 2018),

World Health Organization (WHO). Chemicals and Waste Management: Essential to Achieving the Sustainable Development Goals (SDGs). Available online: http://www.who.int/iomc/publications/IOMC_ CWMandSDG_brochure_final_01Feb18.pdf (accessed on 1 May 2018).

PhD Dissertations and M.A. Thesis

Pitrone, F. Environmental Taxation: A Legal Perspective. Ph.D. Thesis, University of Luiss Guido Carli, Roma, Italy, 2014. Available online: eprints.luiss.it/1291/1/20140217-pitrone.pdf (accessed on 30 May 2018),

Gebregiorgs, M. T. Administrative Powers of the Federal Environmental Protection Authority of Ethiopia in the Protection of the Environment: the Law and the Practice. M.A. Thesis, University of Addis Ababa, Institute of Development and Research, Addis Ababa, Ethiopia, 2010,

Tsegai, B. Industrial Pollution Control and Management in Ethiopia: A Case Study on Almeda Factory and Sheba Leather Industry in Tigrai National Regional State. Ph.D. Thesis, University of Warwick School of Law, Warwick, UK, 2015. Available online: wrap.warwick.ac.uk/67913/1/WRAP_THESIS_Ghebretekle_2015.pdf (accessed on 29 April 2018).

International Instruments

2030 Transforming Our World: The 2030 Agenda for Sustainable Development (2030 Agenda for SD). 2015. Available online: https://www.un.org (accessed on 30 April 2018),

Addis Ababa Action Agenda of the Third International Conference on Financing for Development (AAAATICFD).2015. Available online: www.un.org (accessed on 23 May 2018),

AU 'African Convention on the Conservation of Nature and Natural Resources'. 1968. Available online: faolex.fao.org/docs/pdf/mul45449.pdf (accessed on 30 April 2018),

OAU 'African charter on human and people's rights'. 1986. Available online: www.achpr.org/files/instruments/achpr/banjul_charter.pdf (accessed on 8 June 2016),

OAU 'African Charter on Human and Peoples' Right (ACHPR)'. 1981,

OAU 'Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa'. 1991. Available online: www.jus.uio.no/lm/hazardous.waste.ban...bamako.convention.../portrait.pd ... (accessed on 26 March 2015),

Report of the World Commission on Environment and Development (RWCED) 'Our Common Future'. 1987. Available online: www.un-documents.net/our-common-future.pdf (accessed on 30 April 2018),

Report of the World Commission on Environment and Development (RWCED) 'Our Common Future'. 1987. Available online: www.un-documents.net/our-common-future.pdf (accessed on 30 April 2018),

The General Agreement on Tariffs and Trade (GATT) ArticleI.July1986. Available online: https://www.wto. org/english/docs_e/legal_e/gatt47.pdf (accessedon20June2016),

UN 'Agenda 21'. 1992. Available online: https://sustainabledevelopment.un.org/content/documents/ Agenda21.pdf (accessed on 30 April 2018),

UN 'Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal' 1992. Available online: www.env.go.jp/en//recycle/basel_conv/files/conv_e.pdf (accessed on 8 June 2016),

UN 'Convention on Biological Diversity' (UN CBD). 1992. Available online: https://www.cbd.int/doc/ legal/cbd-en.pdf (accessed on 1 May 2018),

UN 'Framework Convention on Climate Change' (UN FCCC). 1992. Available online: https://unfccc.int/ resource/docs/convkp/conveng.pdf (accessed on 1 May 2018),

UN 'Paris Agreement' 2015. Available online: https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf (accessed on 2 March 2016),

UN 'Rio Declaration on Environment and Development' 1992. Available online: www.un.org/documents/ ga/conf151/aconf15126-1annex1.htm (accessed on 30 April 2018),

UN Stockholm Declaration on the Human Environment (UN SDHE) (1972). Available online: www.un-documents.net/aconf48-14r1.pdf (accessed on 30 April 2018),

UNEP 'Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade'. 2005. Available online: www.fao.org/docrep/011/y5877e/y5877e00.htm (accessed on 8 June 2016),

WTO/Accession Status: Ethiopia-World Trade Organization. Available online: https://www.wto.org/ english/thewto_e/acc_e/a1_ethiopia_e.htm (accessed on 14 May 2018).

Domestic Laws: Federal and Addis Ababa Administration Proclamations, Regulations, Standards and Directives

A Proclamation to Provide for Financial Administration of Addis Ababa City Government (AAFAP); No. 16/2009, No. 1, 2009,

A Regulation of Revenue Authority of Addis Ababa City Administration (AARAR); No. 17/2009, No. 17, 2009,

Access to Genetic Resources and Community Knowledge, and Community Rights Proclamation (AGRCKCRP); No. 482/2006, No. 13, 2006,

Addis Ababa City Government 2006 E.C. Fiscal Year Budget Proclamation (AACG 2006 E.C. FY BP); NO. 31/2013, NO. 39, 2013,

Addis Ababa City Government 2007 E.C. Fiscal Year Budget Proclamation (AACG 2007 E.C. FY BP); NO. 41/2014, NO. 41, 2014,

Addis Ababa City Government 2008 E.C. Fiscal Year Budget Proclamation (AACG 2008 E.C. FY BP); NO. 44/2015 E.C., NO. 44, 2015,

Addis Ababa City Government 2009 E.C. Fiscal Year Budget Proclamation (AACG 2009 E.C. FY BP); NO. 47/2016 G.C., NO. 47, 2016,

Addis Ababa City Government Environmental Impact Assessment Regulation (AAEIAR); No. 21/2006, No 48, 2006,

Addis Ababa City Government Environmental Pollution Control Regulation (AAEPCR); No. 25/2007, No. 56, 2007,

Addis Ababa City Government Financial Administration Regulation (AAFAR); No. 39/2011, No. 39, 2011.

Addis Ababa City Government Revised Charter Proclamation (AACGRCP); No 361/2003, No 86, 2003,

Addis Ababa Cleanliness Administration Agency *Sanitation Service Delivery Standard* (AACAASSDS); 2013,

Addis Ababa Cleanliness Administration Agency. Addis Ababa Cleanliness Administration Agency Sanitation Service Delivery Standard (AACAA SSDS); AACAA: Addis Ababa, Ethiopia, 2014,

Addis Ababa Water and Sewerage Authority Proclamation (AAWSA); No. 298/1972, No. 12, 1972,

Addis Ababa Water and Sewerage Authority Re-establishment Proclamation (AAWSARP); No. 10/1995, No. 3, 1995,

Addis Ababa Water Supply and Sewerage Disposal Service Regulations (AAWSSDSRA); No. 31/2003 Amendment Regulation No. 35/2011, No. 35, 2011,

Addis Ababa Water Supply and Sewerage Disposal Service Regulations (AAWSSDSRA); No. 31/2003 Amendment Regulation No. 35/2011, No. 35, 2011,

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal Ratification Proclamation; No. 192/2000, No 20, 2000,

Biosafety Proclamation (BSP); No. 655/2009, No. 63, 2009,

Charities and Societies Proclamation (CSP); No. 621/2009, No 25, 2009,

Chat Excise Tax Proclamation (CETP); No. 767/2012, No. 60, 2012.

Civil Code of the Empire of Ethiopia Proclamation (CCEEP); No. 165/1960, No. 2, 1960,

Civil Procedure Code of Ethiopia Decree (CPCED); No. 52 of 1965, No. 3, 1965,

Code of Practice of the Floriculture Sector Council of Ministers Regulation (CPFSCMR); No. 207/2011, No. 74, 2011,

Commercial Registration and Business Licensing Proclamation (CRBLP); No. 686/2010, No. 42, 2010,

Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation (Amendment) (DPDEOFDREA); No. 803/2013, No. 61, 2013,

Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation (DPDEOFDRE); No. 691/2010, No. 1, 2010,

Ethiopia Biological Diversity Convention Ratification Proclamation (EBDCRP) of Ethiopia; No. 98/1994, No. 88, 1994,

Ethiopia Revenues and Customs Authority Establishment Proclamation (ERCAEP); No. 587/2008, No. 44, 2008,

Ethiopian Federal Water Resources Management Proclamation (EFWRMP); No. 197/2000, No. 25, 2000,

Ethiopian Mining Proclamation (EMP); No. 52/1993, No. 42, 1993,

Ethiopian Standards Agency Establishment Council of Ministers Regulation (ESAECMR); No. 193/2010, No. 13, 2010,

Ethiopian Water Resources Management Regulation (EWRMR); No. 115/2005, No. 27, 2005,

Federal Administrative Procedure of Proclamation of Ethiopia (FAPPE) 2001 (Draft),

Federal Courts Proclamation (FCP) of Ethiopia; No. 25/1996, No. 13, 1996,

Federal Courts Proclamation Re-amendment Proclamation (FCPRAP) of Ethiopia; No. 454/2005, No. 42, 2005,

Federal Environmental Impact Assessment Proclamation (FEIAP) of Ethiopia; No. 299/2002, No. 11, 2002,

Federal Environmental Protection Organs Establishment Proclamation (FEPOEP) of Ethiopia; No. 295/2002, No. 7, 2002,

Federal Excise Tax Proclamation (FETP); No. 307/2002, No. 20, 2002,

Federal Negarit Gazeta Establishment Proclamation (FNGEP); No. 3/1995, No. 3, 1995,

Federal Pollution Control Proclamation (FPCP) of Ethiopia; No. 300/2002, No. 12, 2002,

Federal Standards for Industrial Pollution Control in Ethiopia (FSIPCE); No. 1/2011, No. 1, 2011,

Federal Urban Lands Lease Holding Proclamation (FULLHP); No. 721/2011, No. 29, 2011,

Fisheries Development and Utilization Proclamation (FDUP); No. 315/2003, No. 32, 2003,

Forest Development, Conservation and Utilization Proclamation (FDCUP); No. 542/2007, No. 56, 2007,

Institute of Biodiversity Conservation and Research Establishment Proclamation (IBCREP); No. 120/1998, No. 49, 1998,

Mining Income Tax Proclamation (MITP); No. 53/1993, No. 43, 1993,

Mining Operations Council of Ministers Regulations (MOCMR); No. 182/1994, No. 84, 1994,

Office of the Federal Auditor General Establishment Proclamation (Amendment) (OFAGEPA); No. 669/2010, No. 22, 2010,

Office of the Federal Auditor General Establishment Proclamation (OFAGEP); No. 669/2010, No. 22, 2010

Pesticides Registration and Control Proclamation (PRCP); No. 674/2010, No. 52, 2010,

Prevention of Industrial Pollution Council of Ministers Regulation (PIPCMR); No. 159/2008, No. 14, 2008,

Public Health Proclamation (PHP); No. 200/2000, No. 33, 2000,

Regulation to Determine and Collect the Sanitary Service Tariff of the Addis Ababa City Government (RDCSSTAACG); Regulation No. 25/2009, No. 25, 2009,

Revised Constitution of Ethiopia of 1955, No. 2, 1995,

Rotterdam Convention Ratification Proclamation; No. 278/2002, No. 25, 2002,

Solid Waste Management Proclamation (SWMP) of Ethiopia; No. 513/2007, No. 13, 2007,

The Ababa City Government Code Enforcement Service Regulation (AACESR); No. 54/2012, No. 54, 2012,

The Addis Ababa City Government Executive and Municipal Service Organs Re-establishment Proclamation (AAEMSORP); No. 35/2012, No. 35,

The Addis Ababa Water Supply and Sewerage Disposal Services Regulations No. 5/1995 (Repealing) Regulations (AAWSSDSRRR); No. 31/2002, No. 1, 2002,

The Bamako Convention Ratification Proclamation; No. 355/2003, No. 77, 2003,

The Basel Convention Amendment Ratification Proclamation; No. 356/2003, No. 77, 2003,

The Constitution of the Federal Democratic Republic of Ethiopia; Proclamation (FDREC); NO. 1/1995, NO. 1, 1995,

The Criminal Code of the Federal Democratic Republic of Ethiopia Proclamation (CCFDREP); No. 414/2004, No. 9, 2004,

The Federal Government of Ethiopia Financial Administration Proclamation (FGEFAP); No. 648/2009, No. 56, 2009,

The House of Peoples' Representatives of Ethiopia Rules of Procedures and Members Code of Conduct Regulation (HPRERPMCCR); No. 3/2006 No 3, 2006,

Trade and Practice Proclamation (TPP); No. 329/2003, No. 49, 2003,

Urban Planning Proclamation (UPP); No. 574/2008, No. 29, 2008,

Value Added Tax Proclamation (VATP); No. 285/2002, No. 33, 2002,

Value Added Tax Regulation (VATR); No. 79/2002, No. 19, 2002,

Waste Management, Collection and Disposal Regulation of the Addis Ababa City Administration Government Regulation (AAWMCDR); No. 13/2004, No. 29, 2004.

Policies, Strategies, and Plans

Finance and Economic Development Bureau of Addis Ababa Administration. Growth and Transformation Plan II (AAA GTP II) (2015/16-2020/21); Addis Ababa Administration: Addis Ababa, Ethiopia, 2016,

Addis Ababa Cleanliness Administration Agency (AACAA). Addis Ababa Cleanliness Administration Agency Solid Waste Policy (AACAASWP); AACAA: Addis Ababa Ethiopia, 1995,

Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation of Ethiopia. Environmental Policy of Ethiopia (EPE); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1997,

Ethiopia Peoples' Revolutionary Democratic Front (EPRDF). EPRDF Policy Manual; The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2011,

The Federal Government of Ethiopia. Ethiopia's Climate Resilient Green Economy: Green Economy Strategy (ECRGES); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2011,

The Federal Government of Ethiopia. Ethiopia's Vision for a Climate Resilient Green Economy (EVCRGE); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2011,

Ministry of Water Resources. Ethiopian Water Resources Management Policy (EWRMP); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2001.

Ministry of Water Resources. Ethiopian Water Sector Strategy (EWSS); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2001,

National Planning Commission of Ethiopia. Growth and Transformation Plan II of Ethiopia Volume I: Main Text (GTPE II) (2015/16-2020/21); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2016,

National Planning Commission of Ethiopia. Growth and Transformation Plan I of Ethiopia Volume I: Main Text (GTPE II) (2010/11-2014/15); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2010,

Ministry of Industry of Ethiopia. Industrial Development Strategy of the Federal Democratic Republic of Ethiopia (IDSFDRE); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 2002,

Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation of Ethiopia. National Conservation Strategy Volume II (NCS II); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1996,

Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation of Ethiopia. Natural Resources Development and Environmental Protection Strategy and Major Programmes (NRDEPSMP); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1994,

Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation of Ethiopia. The Conservation Strategy of Ethiopia Volume III: Institutional Framework and Operational Arrangements (CSE III); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1997,

Environmental Protection Authority in Collaboration with the Ministry of Economic Development and Cooperation of Ethiopia. The Conservation Strategy of Ethiopian Volume IV, Action Plan for the Federal Policy on Natural Resources and the Environment (CSE IV); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1996,

Ministry of Mines and Energy of Ethiopia. The National Energy Policy of Ethiopia (NEPE); The Federal Democratic Republic of Ethiopia: Addis Ababa, Ethiopia, 1993.

Cases

Federal First Instance Court of Ethiopia. Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia; Civil File No. 64902; Federal First Instance Court: Addis Ababa, Ethiopia, 28 February 2007,

Federal High Court of Ethiopia. Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia; Civil File No. 62904; Federal High Court: Addis Ababa, Ethiopia, 12 June 2008,

Federal Supreme Court Cassation Division of Ethiopia. Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia; Civil File No. 51052; Federal Supreme Court: Addis Ababa, Ethiopia, 3 December 2008,

Federal Supreme Court Cassation Division of Ethiopia. Revenue and Customs Authority of Ethiopia vs. Mr. Daniel Mekonnen; Civil File No. 43781; Federal Supreme Court: Addis Ababa, Ethiopia, 21 July 2010,

Supreme Court of the Philippines, Minors Oposa v. Secretary of the Department of Environmental and Natural Resources (1993). Available online: file:///C:/Users/mgebregi/Desktop/Art%204%20[PIL%202]/Phillipense%20Minors%20Oposa%20Case.pdf (accessed on 22 June 2018).

Official Reports and Annual Books

Addis Ababa Administration (AAA). Addis Ababa Administration Micro Tax Payers Sub-Cities Branches Annual Report (2011-2014); AAA: Addis Ababa, Ethiopia, 2014,

Addis Ababa Cleanliness Administration Agency Annual Report of 2015 (AACAA AR 2015); AACAA: Addis Ababa, Ethiopia, 2015,

Addis Ababa Cleanliness Administration Agency Annual Report of 2016 (AACAA AR 2016); AACAA: Addis Ababa, Ethiopia, 2016,

Addis Ababa Cleanliness Administration Agency Annual Report of 2017 (AACAA AR 2017); AACAA: Addis Ababa, Ethiopia, 2017.

Addis Ababa Solid Waste Re-use and Disposal Project Office Annual Report of 2015 (AASWRDPO AR 2015); AASWRDPO: Addis Ababa, Ethiopia, 2015,

Addis Ababa Solid Waste Re-use and Disposal Project Office Annual Report of 2016 (AASWRDPO AR 2016); AASWRDPO: Addis Ababa, Ethiopia, 2016,

Addis Ababa Solid Waste Re-use and Disposal Project Office Annual Report of 2017 (AASWRDPO AR 2017); AASWRDPO: Addis Ababa, Ethiopia, 2017.

Addis Ababa Water and Sewerage Authority. WasteWaterTreatmentandReuseSub-Process2015AnnualReport (AAWSA WWTRSP 2015 AR); AAWSA: Addis Ababa, Ethiopia, 2015,

Addis Ababa Water and Sewerage Authority. Waste Water Treatment and Reuse Sub-Process 2016 Annual Report (AAWSA WWTRSP 2016 AR); AAWSA: Addis Ababa, Ethiopia, 2016,

Addis Ababa Water and Sewerage Authority. Waste Water Treatment and Reuse Sub-Process 2017Annual Report (AAWSA WWTRSP 2017 AR); AAWSA: Addis Ababa, Ethiopia, 2017,

Addis Ababa Administration (AAA). Solid Waste Management Strategy and Institutional Report; AAA: Addis Ababa, Ethiopia, 2013,

Communication Affairs Bureau of Addis Ababa Administration (CABAAA). Annual Book; CABAAA: Addis Ababa, Ethiopia, 2014,

Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE). Assessment of Manufacturing Industries Level of Pollution and Extent of Environmental, Economic and Social Damages: MEFCCE: Addis Ababa, Ethiopia, 2014,

Environmental Protection Authority ‘National Report of Ethiopia: UN Conference on Sustainable Development’ (Rio+20) (UN CSD Rio+20 NRE). 2012. Available online: https://sustainabledevelopment.un. org/content/documents/973ethiopia.pdf (accessed on 30 April 2018).

Miscellaneous

Ethiopia's Climate Resilient Green Economy Facility Operational Manual (ECRGEFOM) (2014),

Revenue and Customs Authority of Ethiopia, Balanced Scorecard (RCAE BSC) (2011-2015),

Ministry of Water, Energy and Irrigation of Ethiopia Balanced Scorecard (MWEIE BSC) (2011-2015),

Ministry of Finance and Economic Development of Ethiopia Balanced Scorecard (MFEDE BSC) (2011-2015),

Federal Environmental Protection Authority of Ethiopia Business Process Reengineering (FEPAE BPR) (2010),

Federal Environmental Protection Authority of Ethiopia Balanced Scorecard (FEPAE BSC) (2012-2016),

Federal Environmental Protection Authority of Ethiopia, Letters of Delegation of the Power to Review EIA to Sectoral Institutions (FEPAE LDPR EIA SI) (Addis Ababa, Ethiopia, 14 November 2009),

Auditors General Capacity Enhancement Project, Performance and Environmental Audit Manual, Reviewed and Updated by Cowater International Inc. (2006),

Federal Environmental Protection Authority of Ethiopia, Letter to the Addis Ababa Environmental Protection Authority (FDRE EPA L AAEPA), Ref. no. 8/1.1/1089, Date 25/02/2012,

Federal Environmental Protection Authority of Ethiopia, Letter to the Ministry of Trade of Ethiopia (FDRE EPA L MTE), Ref. No. 8/1.1/2245, Date 08/08/2012,

Interface between the Ministry of Trade of Ethiopia and Addis Ababa Environmental Protection (June 2013),

Memorandum of Understanding between Addis Ababa Administration and Ethiopian Revenues and Customs Authority (MUBAAAERCA) (September 2011),

Solid Waste Collecting Contractual Format of Addis Ababa Cleanliness Administration Agency and Private Solid Waste Collecting Organisations (SWCCF AACAA PSWCO),

Memorandum of Understanding between Addis Ababa Cleanliness Administration Agency and Addis Ababa Water and Sewerage Authority (MUBAACAAAAWSA) (2011),

Addis Ababa Cleanliness Administration Agency, Micro and Small Solid Waste Collecting Organisations Zoning and Service Delivery Directive (AACAA MSSWCOZSDD) (2008),

Addis Ababa Water and Sewerage Authority, Sewer Service Delivery Contract Format (AAWSA SSDCF),

Addis Ababa Water and Sewerage Authority, Private Sludge Dislodging Service Provision Contract Format (AAWSA PSDSPCF),

Addis Ababa Water and Sewerage Authority Board Minute no. 208/1999,

Ministry of Environment, Forest and Climate Change of Ethiopia, Assessment on Industrial Pollution and the Environmental, Economic and Social Impact (2014) (MEFCCE AIPEESI),

Ministry of Industry of Ethiopia, Summary of Review Works on Environmental Management Practices of Selected Industries in Ethiopia (2014) (MIE SRWEMPSIE),

Environmental and Social Impact Assessment of Waste Water Treatment Plant and Sewer Line Expansion and Rehabilitation in the Kaliti Catchment (2014) (ESIA WWTPSLER KC),

Environmental Protection Authority of Ethiopia, Survey on Environmental Pollution Impact on Akaki and Mojo Rivers (2006),

The House of Federation of the Federal Democratic Republic of Ethiopia' The Federal Budget Grant Distribution Formula (HFFDRE: FBGDF) (2012/13–2016/17).